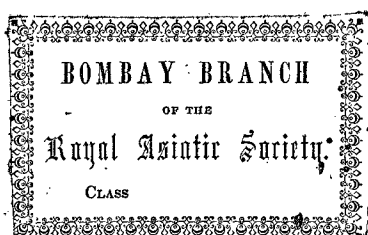




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IRRIGATION REVENUE REP

OF THE

BOMBAY PRESIDENCY

EXCLUDING SINDH

1889-90

PARTS

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IRRIGATION REVENUE REPORT, BOMBAY PRESIDENCY (EXCLUDING SIND).

1889-90.

The report is, as usual, divided into two parts, of which the first relates to works for which Capital and Revenue Accounts are kept, and the second to those for which only Revenue Accounts are kept. The first includes entirely new works and restorations or extensive improvements to old works undertaken within the last 25 or 26 years; the second includes the old works, mostly tanks and weirs, throughout the country, which are in the charge of the Public Works Department, and to which minor improvements are effected from time to time.

PART I.

COMPRISING WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

The following list shows the works in operation: these are 36 in number. In accordance with the orders of the Government of India the works have been arranged in one uniform order in all statements, and each work is given a number, the Protective Works heading the list:—

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MAJOR WORKS.			
<i>Protective Works.</i>			
Poona	1	Níra Canal	Storage lake at Bhátghar under construction, but affords storage to the extent of 2,000 millions cubic feet, the designed capacity being 5,500 millions. Complete.
Sholápur	2	Mhasvad Tank.	
<i>Productive Works.</i>			
Ahmedabad	5	Háthmati Canal	Survey for storage undertaken.
Khándesh	6	Lower Pánjhra River Works.	Storage tank at Mukti complete.
Násk	7	{ Kádva { Pálkhed Canal River { Ojhar { Támbat Works. { Canal. Wadáli Canal	{ Wághad Tank under construction.
Ahmednagar	8	Pravara River Works—Lákh Canal.	Máládevi Tank proposed for this work, but sanction withdrawn pending enquiry into modified proposals for the dam.
Poona	9	Mutha Canals	Lake Fife at Khadakvásla complete.
Sholápur	10	Ekrúk Tank	Complete.
Sátára	11	Krishna Canal	Site for a storage reservoir is under consideration.
MINOR WORKS AND NAVIGATION.			
Ahmedabad	12	Khári Cut	The Bokh project under revision.
Khándesh	13	Hartála Tank	Complete.
	14	Mhasva do.	Do.
	15	Jámda Canals	Reservoir at Chankápur sanctioned and commenced, but work suspended for want of funds.
	16	Pársul Tank.	Complete.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MINOR WORKS AND NAVIGATION—continued.			
Ahmednagar ...	17	Pravara River Works—Ojhar Canal.	Vide remark against "Lakh Canal.
	18	Bhátodi Tank	Complete.
	19	Mátoba Tank	Do.
Poona ...	20	Kásurdi do.	Do.
	21	Shirsuphal do.	Do.
	22	Bhádálvádi do.	Do.
Sholápur ...	23	Koregaon Tank	Do.
	24	Ashti do.	Do.
	25	Revári Canal	Storage at Sonkeh proposed.
	26	Upper Mán River Works ...	Pingli Tank constructed.
Sátára ...	27	Yerla River Irrigation Works.	Nehr Tank constructed.
	28	Chikhli Canal	No storage works yet proposed.
	29	Maini Tank	Complete
Bijápur ...	30	Muchkundi Tank	Do.
	31	Nilgund do.	Do.
Belgaum ...	32	Gadikeri Tank	Do.
	33	Dámbal do.	Do.
	34	Medleri do.	Do.
Dhárwár ...	35	Madag do.	Do.
	36	Asundi do.	Do.
	37	Mávinkop do.	Do.
<i>Provincial.</i>			
Belgaum ...	39	Gokák Canal, 1st Section* ...	Storage works at Dhupdal under construction.

Nos. 3 and 4, or Chankápur and Máládevi tanks, are not included, as the works were not in operation; the former has been suspended and the latter has not yet been approved.* No. 38—Gokák Canal, 2nd Section—is in abeyance.

Capital outlay.

2. The total Capital outlay during and up to the end of the year was as follows:—

Main Heads.	To end of 1888-89.	During 1889-90.	To end of 1889-90.
A.—Direct Charges.			
I.—Works	Rs. 1,80,25,011	Rs. 4,75,648	Rs. 1,85,20,659
II.—Establishment	40,61,925	1,26,951	41,88,876
III.—Tools and Plant	4,72,725	30,992	5,03,717
IV.—Suspense ... ..	.....	.....	.....
Profit and loss ... ..	.....	.....	.....
Total A. ...	*2,25,59,661	6,53,591	2,32,13,252
Deduct—Receipts on Capital account ...	33,733	664	34,397
Net Total A.—Direct Charges ...	*2,25,25,928	6,52,927	2,31,78,855
B.—Indirect Charges.			
Capitalization	3,41,983	3,529	3,45,512
Loss by exchange ... ..	.....	.....	.....
Leave and pension allowances	7,39,320	17,774	7,57,094
Total B. ...	10,81,303	21,303	11,02,606
Grand Total, A+B. ...	*2,36,07,231	6,74,230	2,42,81,461

* The difference of Re. 1 between this and the figures given in last year's report is due to an adjustment.

3. The following abstract shows the details of the above :—

	Number of Works.	EXPENDITURE, 1889-90.			Total Expenditure, Direct and Indirect, to end of 1889-90.
		Direct.	Indirect.	Total.	
<i>Major Works.</i>		Rs.	Rs.	Rs.	Rs.
Protective Works. { In operation.	2	3,08,158	9,070	3,17,228	67,83,654
{ In abeyance.	2	214	8	222	1,01,289
Total ...	4	3,08,372	9,078	3,17,450	68,84,943
Productive Works... In operation.	7	42,136	4,595	46,731	1,04,88,666
Minor Works ... { In operation.	26	48,667	1,924	50,591	59,79,828
{ In abeyance.	1	1,006	—12	994	1,87,600
Total ...	27	49,673	1,912	51,585	61,67,428
Provincial Minor Works. } In operation.	1	2,52,746	5,718	2,58,464	7,46,424
Grand Total ...	39	6,52,927	21,303	6,74,230	2,42,81,461

The number of Class I Works in operation is 36, being one more than in the previous two years, the Pársul Tank having been brought into operation during the year. The Chankápur and Máládevi tanks and the Gokák Canal, 2nd Section, are still in abeyance. The question of resuming work on the Chankápur Tank has been recently referred to the Government of India. The provision of storage for the Pravara River Works is also under consideration.

The Capital outlay (Rs. 6,74,230) was principally on the Nira and Gokák Canals, and considerable progress was made with both works; an additional area of 18,521 acres was brought under command of the Nira Canal, making the total net irrigable area commanded by the canal 134,935 acres; the storage was increased to 2,000 millions of cubic feet, the ultimate full capacity being 5,500 millions.

The progress made with the construction of the masonry storage weir (25 feet) at Gokák was satisfactory; it is expected that the work will be practically complete in March 1891.

4. Under the orders of the Government of India, the Gokák Canal Works, comprising the storage works now in course of construction at Dhupdal and the first section of the Canal, were provincialized with effect from the 1st April 1889, on the basis that the whole of the expenditure to be incurred from that date shall be met from Provincial revenues, and that the whole of the receipts, from whatever source derived, shall be credited to that head.

It may be remarked that owing to this transfer the head Provincial appears in the Irrigation Accounts of this Presidency for the first time.

5. The Interest account to end of the year stands as follows :—

	AMOUNT.				AMOUNT.		
	Protective Works.	Productive Works.	Total.		Protective Works.	Productive Works.	Total.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Total Interest charges to end of 1888-89 ...	20,08,178	64,70,936	80,79,114	Net Revenue realized to end of 1888-89...	78,443	7,86,959	7,08,516
Do. do. for 1889-90 ...	2,61,179	3,99,744	6,60,923	Do. do. during 1889-90...	6,320	1,45,088	1,51,408
					72,123	9,32,047	8,99,924
				Balance Net Interest charges ...	19,41,480	50,38,633	78,80,113
Total ...	18,69,357	68,70,680	87,40,037	Total ...	18,69,357	68,70,680	87,40,037

6. The gross area under command was 915,096 acres, as compared with 911,816 acres in the previous year, while the net irrigable area was 533,313 acres as compared with 512,301, or an increase of 21,012 acres, the greater of which was on the Nira Canal.

7. The gross revenue realized from all sources during the year under review after deducting refunds of revenue (Rs. 3,081,) was Rs. 4,22,859, of which Rs. 4,11,294 were direct and Rs. 11,565 indirect receipts; the net revenue actually realized was Rs. 1,75,733.

The gross revenue shows an increase of Rs. 51,314 and the net revenue an increase of Rs. 38,500 as compared with the previous year.

8. The financial results of the year by main heads were as follows :—

	Area irrigated.	REVENUE REALIZED.			Working Expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Class I—Works for which Capital and Revenue Accounts are kept.</i>						
Major Works	Protective Works	22,722	45,712	...	45,712	39,892
	Productive Works	27,659	2,78,547	7,222	2,85,769	1,40,681
	Total	56,381	3,24,259	7,222	3,31,481	1,80,073
Minor Works	...	26,040*	76,564	4,343	80,907	62,804
Provincial Minor Works	...	4,178	10,471	...	10,471	4,249
Total Class I	...	86,599	4,11,294	11,565	4,22,859	2,47,126

* Includes 1,049 acres on which consolidated assessment is levied.

The area shown as irrigated includes an area of 1,049 acres on which a consolidated land and water assessment is levied, and is derived from works on which only expenditure on improvements has been incurred.

9. The figures showing areas irrigated, revenue assessed and realized, and working expenses, as compared with former years, are as follows :—

Years.	Area irrigated.	REVENUE.		Working Expenses.
		Assessments.	Realizations.	
	Acres.	Rs.	Rs.	Rs.
1882-83	28,735	2,48,714	2,06,174	1,66,870
1883-84	32,962	2,44,247	2,78,130	1,70,089
1884-85	39,655	2,47,702	2,60,080	1,92,612
1885-86	59,450	2,83,232	2,79,877	2,10,686
1886-87	42,628	3,03,475	3,34,468	2,39,417
1887-88	46,187	3,49,512	3,43,445	2,41,385
1888-89	79,195	4,14,153	3,71,545	2,34,312
1889-90	85,550	4,49,838	4,22,859	2,47,126

The details given in this table show a continuous increase of areas irrigated almost from 1882-83, omitting one year 1885-86, and an especially steady increase of assessment throughout the whole period; it will be noticed that while in the first four years from 1882-83 to 1885-86 the increase in assessment was only Rs. 34,518, in the succeeding four years ending 1888-89 the increase has been Rs. 1,30,921, and that in 1889-90 there was a further increase of Rs. 35,655.

The area irrigated was 85,550 acres as compared with 79,195 acres in the previous year and 46,187 acres in 1887-88; thus the large increase in the previous year has been sustained, and this notwithstanding the fact that the rainfall was more favourable, and that on many works the low rates charged for the lower classes of crops had been raised to those which prevailed five years ago.

The total increase in irrigation was thus 6,355 acres, of which Protective, Productive and Provincial contributed 4,059, 3,102 and 341 respectively, while there was a falling off in the area irrigated from Minor Works of 1,147 acres.

In Protective Works the increase was almost wholly on the Nira Canal, while in Productive Works the great increase was on the Mutha Canals, on which the area irrigated was 13,388 against 9,764 acres in the previous year; in

four cases were there any reductions in areas amongst Productive Works, viz., the Hāthmati Canal, the Lower Pānjhāra River Works, Lākh Canal and Ekrūk Tank; the decrease on the Lākh Canal was comparatively the most serious, as the area irrigated was only 322 against 814 acres in the previous year, but the uncertainty of the supply in the river fully accounts for this, and the results on this and the Pravara River Works generally must always be unsatisfactory until storage is provided; enquiries are now in progress with a view to remedying this deficiency.

The decrease in the area irrigated under Minor Works was chiefly on the Jāmāda Canals, where the decrease was 3,151, and was partly due to heavier and more favourable rainfall and partly to deficiency of supply; this is another work that must yield more or less unsatisfactory results until the storage reservoir at Chānkapur is completed.

On the Khāri Cut the area irrigated was 2,271 acres against 13 acres in 1888-89 and 2,413 acres in 1887-88. In 1888-89 this work was an entire failure, as the water required to fill the tanks on which the channels depend, was not available owing to deficient rainfall. In the year under review the greater part of the rainfall occurred early in the season, and there was great scarcity of water later on. This state of things will be remedied when the revised Khāri Cut project, including the Bokh reservoir, is carried out, as then water which now runs to waste early in the 'rains' can be stored for use later on when the rainfall so often fails and is most urgently required for rice.

The scheme for a reservoir on the Bokh is now being revised, the objections raised to it by the Government of India are being fully enquired into, and a proposal has been submitted to that Government to allow the work to be undertaken provincially.

10. The following table contrasts the distribution of rainfall each month for the last five years:—

	I.—Works having an unfailing supply.					II.—Works dependent on local rainfall.				
	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.
<i>Kharif.</i>	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
June	1·52	6·81	4·33	3·74	2·49	1·17	5·21	3·16	4·03	2·04
July	4·53	5·46	7·18	5·19	4·21	3·92	5·81	5·77	2·76	6·24
August	3·56	2·39	2·65	2·62	1·47	3·78	5·05	3·67	2·20	2·31
September	8·39	2·85	4·81	6·09	9·52	9·13	2·91	6·08	5·42	10·27
Total	18·05	17·51	19·02	17·64	17·69	18·00	18·98	18·68	14·41	20·86
<i>Rabi.</i>										
October	4·19	8·23	3·41	2·49	6·70	3·59	7·44	2·37	1·93	7·03
November	1·02	0·57	4·69	1·55	0·06	0·44	0·48	2·05	3·00	0·12
December	0·92	1·74	0·09	...	...	0·49	1·58	0·10	0·06	...
January	...	...	1·34	...	...	...	...	0·99	0·01	...
Total	6·13	10·54	9·53	4·04	6·76	4·52	9·50	5·51	5·00	7·15
Total, Kharif and Rabi.	24·18	28·05	28·55	21·68	24·45	22·52	28·48	24·19	19·41	28·01

The rainfall in the current was much heavier than in the previous year on all works except the Kādva River Works in Nāsik, the Bhātodi Tank in Ahmednagar and the Mātoba Tank in Poona.

The average in the two seasons, taking all the works together, was 25·75 inches as compared with 19·68 in 1888-89.

It may be mentioned that, whereas in the previous year the large increase in area irrigated was attributed generally to scanty and deficient rainfall, the average of 33 stations having been 19·65 in 1888-89 as compared with 26·35, the average in 1887-88, in this year the average of 35 stations was 25·75, and rainfall was generally sufficient everywhere; the increase in the total area irrigated, though small compared with the previous year, is the more satisfactory, as it shows an increased tendency to appreciate the benefits of irrigation.

11. The total area irrigated was distributed as follows :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1888-89	35,851	43,344	79,195
1889-90	44,766	40,784	85,550

There is an increase in the kharif and a falling off in rabi irrigation; the works which show the principal increases are :—

	Acres.
1. The Mutha Canals	3,574
2. The Nira do.	3,371
3. The Khāri Cut	2,258
4. The Mhasvad Tank	688

In the case of other works the increases and decreases are small, and are explained in the reports of individual works.

12. Water was given free to 2,978 acres on the Nira Canal and to 252 acres on the Mhasvad Tank.

13. It is observed that areas irrigated were in excess of the areas for which applications were received. The difference is due to various causes explained in the body of the report.

14. The working expenses on all works for the year amounted to Rs. 2,47,126 against Rs. 2,34,312 in the previous year, showing an increase of Rs. 12,814 as under :—

	1888-89.	1889-90.	Increase or Decrease.
	Rs.	Rs.	Rs.
<i>Major Works.</i>			
Protective Works	31,521	39,392	+7,871
Productive Works	1,28,521	1,40,681	+12,160
Total	1,60,042	1,80,073	+20,031
Minor Works and Navigation	69,476	62,804	—6,672
Provincial Minor Works	4,794	4,249	—545
Grand Total	2,34,312	2,47,126	+12,814

The Major Works show an increase of Rs. 20,031 as compared with the previous year, and Minor Works a decrease of Rs. 6,672.

15. The following table contrasts the charges under the principal heads with those of the two previous years :—

	1887-88.	1888-89.	1889-90.
	Rs.	Rs.	Rs.
Works	1,488	1,221	19
Repairs	1,42,887	1,36,280	1,33,922
Establishment	74,773	69,788	80,111
Tools	1,992	3,379	5,124
Total, in the Public Works Department	2,21,140	2,10,668	2,19,176
Collection charges	12,778	13,877	16,737
Indirect charges	10,467	9,767	11,213
Total	2,44,385	2,34,312	2,47,126

It will be noticed that the total increase in working expenses as compared with last year—Rs. 12,814—is almost entirely due to charges on account of Establishment and Tools and Plant; those on establishment being, in great part, adjustments of charges for revenue management, which had formerly been debited to repairs, and in large part to the larger proportion of establishment debited to the Nira and Mutha Canals Revenue Accounts. Those works being still under construction, the debit to Capital varies with the Capital outlay.

Notwithstanding the increase, the incidence of working expenses on assessed water revenue is slightly less than it was in the previous year, being 55 against 56 per cent. of the gross revenue, and Rs. 2.89 against Rs. 2.96 per acre irrigated.

16. The indirect receipts, as shown in Statement II—E, were Rs. 11,565, and if Rs. 20,903 formerly entered in the accounts as Indirect Receipts. savings to Government from supply of water from the Mutha Canal to the station and cantonment of Poona be added to this, the indirect receipts amount to Rs. 32,468, and the total earnings of the year to Rs. 4,70,741, as compared with Rs. 4,35,596 in the previous year. Also if Rs. 5,833 plus Rs. 41,328 on account of the supply to the Poona City = Rs. 47,161, being the difference between the value of water from the Mutha Canal at normal rates and at the special reduced rates supplied either gratuitously or at reduced rates, be taken credit for in the revenue returns of the work as a book credit, and added to above, the earnings will be Rs. 5,17,902.

17. The net assessed revenue of the year, after deducting working expenses, including indirect and all other charges, and neglecting the items referred to in preceding paragraph, was Rs. 2,02,712.

The details of the assessments were as follows:—

	DIRECT REVENUE.			Indirect Revenue.	Total.
	Water Rates.	Other Receipts.	Total.		
Major Works.	Rs.	Rs.	Rs.	Rs.	Rs.
Protective Works ...	39,656	3,349	43,005	...	43,005
Productive Works...	1,88,852	1,12,586	3,01,438	7,222	3,08,660
Total ...	2,28,508	1,15,935	3,44,443	7,222	3,51,665
Minor Works ...	77,256	5,674	82,930	4,343	87,273
Provincial Minor Works ...	7,272	3,628	10,900	...	10,900
Grand Total ..	3,13,036	1,25,237	4,38,273	11,565	4,49,838

18. The average water rates per acre were:—

	1888-89.	1889-90.
	Rs.	Rs.
Protective Works ...	1.35	1.38
Productive Works ...	7.17	6.82
Minor Works ...	2.46	3.09
Provincial Minor Works ...	1.54	1.75
All taken together Rs. ...	3.53	3.66

The average rate is very little higher than the previous year, although the water rates have been comparatively higher for the lower classes of crops; but the reason is that there has been a very much greater area of the lower classes of crops under irrigation in this year, and a considerable reduction in sugarcane and wheat.

19. The water-rate assessments and other receipts compare with those of the previous year as under :—

	1888-89.	1889-90.
	Rs.	Rs.
Water rates	2,79,710	3,13,036
Other Receipts—		
Plantations	14,690	14,641
Water power	7,050	7,050
Water-supply to towns	90,510	90,607
Miscellaneous	12,400	12,939
	1,24,650	1,25,237
Share of land revenue	9,793	11,565
	1,34,443	1,36,802
	4,14,153	4,49,838

In the item water rates there is an increase of Rs. 33,326 and in other receipts Rs. 587, or a total increase of Rs. 33,913 in the gross assessed direct revenue.

20. The principal crop acreages irrigated during 1888-89 and 1889-90 were as follows :—

Names of Crops.	1888-89.	1889-90.	Increase or Decrease.
	Acres.	Acres.	Acres.
Gardens and orchards	3,641	3,025	—616
Sugarcane	8,820	7,175	—1,645
Wheat	14,854	12,254	—2,600
Rice	3,866	4,384	+518
Maize	1,975	2,237	+262
Jowár	20,272	17,560	—2,712
Bájrí	6,662	13,325	+6,663
Gram, &c.	5,294	6,333	+1,039
Ground-nut... ..	6,120	9,480	+3,360
Condiments	2,310	2,405	+95
Fodder	1,616	1,867	+251

As in the past year, the principal crops for which water was required during the year were :—

	Acres.
Jowári	17,560
Bájrí	13,325
Wheat	12,254
Ground-nut	9,480
Sugarcane	7,175

There was a decrease as compared with the previous year under jowári and wheat, but owing to exceptionally favourable rainfall during the rabi season this was to be expected; on the other hand, the very large increase in the area of ground-nuts—rather more than 50 per cent.—is satisfactory, as this is a valuable crop; there was also a large increase in the area of bájrí.

The area under rice increased from 3,866 to 4,384 acres; this was principally owing to the area under the Khári Cut, which in the previous year failed altogether.

21. The total estimated value of crops irrigated is shown as Rs. 38,90,146, while in the past year the value was estimated at Rs. 42,73,519,—a difference of Rs. 3,83,373, which is accounted for by the falling off in the areas of sugarcane and wheat.

22. The revised water rates were in force during the year on all works except the Nira Canal and Mhasvad, Koregaon, Medleri and Asundi Tanks. The terms for which the reduced rates were sanctioned had not expired in the case of the first three works. In the case of the last two, a continuation of the reduced rates was specially sanctioned.

Statement G shows the areas and water-rate assessments during the year according to the system of classification adopted in fixing the scale of water rates, and this will be useful in future years for comparing the effect in the alteration of rates. It will be sufficient now to say, that in this, the first year in which the increased rates have been brought into force, the result has been in every case satisfactory : there have been more or less increases in the area irrigated on all works except those referred to in para. 9, while there has been a substantial increase in the revenue.

Detail of working.

23. The following table gives the details of the working expenses of some of the principal works :—

Names of Works.	Average incidence of water rate per acre.	Cost per acre of crop measurements.	WORKING EXPENSES. TOTAL IN THE PUBLIC WORKS DEPARTMENT DIRECT CHARGES.	
			Per mile of main canal.	Per acre irrigated.
Canals.	Rs.	A. p.	Rs.	Rs.
Nira Canal	1.12	0 10	246	1.12
Háthmati Canal	2.40	0 9	285	2.54
Kádvá River Works	3.38	1 3	147	4.31
Mutha Canals	9.09	1 6	872	5.75
Krishna Canal	7.9	2 1	427	3.99
Jámda Canals	2.46	1 5	227	4.38
Pravara River Works—Ojhar Canal	1.96	1 6	280	1.16
Tanks.				
Mhasvad Tank	2.20	2 3	388	1.58
Ekrúk do.	3.72	2 8	252	4.77
Bhátodi do.	2.90	3 0	562	1.93
Mátoba do.	2.20	0 4	110	2.86
Shirsuphal do.	2.45	0 5	181	1.74
Maini do.	4.2	2 3	460	2.40

The cost of measurements varies considerably in different districts, the reason being that where the areas irrigated are small, the measurements are made by the ordinary canal establishments and the cost of measurement is small, as, for instance, on the Háthmati Canal and Mátoba and Shirsuphal Tanks ; where larger areas are irrigated, a special measuring establishment is necessary, and the cost is higher: the Nira Canal is an exception to this latter rule, owing partly to some of the fields being sub-divided into irrigation numbers so as not to require periodical re-measurement, and partly to the establishment being in part in charge of construction. The cost of measurement was considerably less in the Mutha Canals than in the previous year : in the Krishna Canal and Maini Tank in Sátára it was higher.

In future reports it will be convenient if in place of the rate per acre only being given, the actual total cost of measurement on each work is shown, to admit of averages being determined and comparisons made.

24. The state of the collections was as follows :—

	Rs.
Balance of demands unrealized at the commencement of the year	34,806
Demands of the year—	Rs.
Rabi, 1888-89	77,852
Kharif, 1889-90	2,31,734
Miscellaneous receipts	1,25,237
	4,34,823
	Total ... 4,69,629
Deduct—Remissions	14,840
	Net Total ... 4,54,789
Amount unrealized at the close of the year	40,414
Actual receipts of the year...	4,14,375
Add—Share of land revenue	11,565
	4,25,940
Deduct—Refunds of revenue	3,081
Revenue realized as per paras. 7 and 8	4,22,859

The remissions and refunds together amount to Rs. 17,921.

There is an increase in the amount unrealized at the close of the year : of the total (Rs. 40,414), Rs. 21,281 is on the Mutha Canals, Rs. 6,457 on the Mhasvad Tank and Rs. 5,383 on the Krishna Canal.

25. In Statement I—E the duty of water on each work, as well as the basis to which the duties were calculated, &c., are shown. The results vary very much on the different works, but this is to be expected, as the conditions also vary considerably.

Experiments were made in the Khándesh and Sholápur districts, also on the Níra Canal, on the actual quantities of water required for the irrigation of certain crops, details of which are given in the Executive Engineers' reports.

On the Níra Canal some experiments were made on the irrigation of wheat, six waterings were given, and the quantity of water used was 181,054 cubic feet, or a duty of only 100·2 acres per cubic foot: this low duty as compared with last year, when it was 186 acres, is explained by the Executive Engineer as probably due to the fact that some of the waterings had to be extended to 2 days instead of 1, and some parts of the field were thus unavoidably irrigated twice.

On the Lower Pánjhra River Works, Khándesh, Bansi or Bakshi wheat took 90,574 cubic feet and on the Jámda Canal the same crop only 62,795 cubic feet per acre.

On the Ekrúk Tank, Sholápur, the quantity of water for the following crops per acre was found to be necessary :—

Sugarcane	479,000 cubic feet per acre.
Pansal rice, i. e., superior	192,550 do.
Suki Sal, i. e., rice inferior	6,936 do.
Ground-nut	42,800 do.
Jod wheat	77,280 do.

26. The question was raised in para. 12 of the review of the Revenue Report for 1888-89 by the Government of India, as to whether it would not be advisable either to close, or to make over to the District authorities, such works as could not be profitably maintained under the present system, and the Muchkundi Tank was quoted as an example of the works referred to.

The matter has been carefully enquired into, and there is a consensus of opinion in favour of maintaining the works under the existing system; the revenue is slowly but steadily increasing on all, or nearly all, the works, and in time there will cease to be any direct loss, while the indirect benefits will continue to increase.

Statement A among appendices shows the working expenses and net profit or loss on the ordinary irrigation works in the Southern Division for the last five years, from which it will be seen that seven works yield a profit, while four show a deficit.

Taking the whole of the works for the Southern Division together there is a net profit of Rs. 8,323 for the five years ending 1889-90, while in 1889-90 it amounted to Rs. 11,415, which on a total capital outlay of Rs. 19,73,592 gives a return of 0.57 per cent.

The figures shown in the statement prove beyond doubt that the revenue and the area under irrigation are slowly but steadily improving, and the latest reports received hold out reasonable hopes that the leaks in the bed of the Muchkundi Tank, which up to the present prevented it from retaining water, are now getting staunched, and that this year the area under irrigation will be in excess of previous years.

The expenditure on the works is principally due to repairs, which would, in any case, have to be executed by the Irrigation Department, whether the works were in its charge or in that of the Revenue Department, so that there would be no economy in handing the works over to that Department, and consequently it is considered that the present arrangement should be continued, and with careful management matters will steadily go on improving.

27. The question raised by the Government of India in para. 13 of the review of the Revenue Report for 1888-89 regarding the rates to be charged for water supplied to the City of Poona is under consideration, and the decision come to will be duly communicated to the Government of India.

PART II.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

28. The following shows a comparison of the figures for this year compared with 1888-89 :-

	1889-90.	1888-89.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Area irrigated acres	145,203	143,683	1,520	.....
	Rs.	Rs.	Rs.	Rs.
Revenue receipts	5,31,793	5,25,557	6,286	.....
Expenditure	1,96,228	1,57,647	38,581	.....
Net revenue	3,35,565	3,67,910	.....	32,345

29. The following gives some details of expenditure :-

	Expenditure.		Comparison.	
	1889-90.	1888-89.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Extensions and improvements	2,528	2,305	223	.....
Maintenance and repairs	63,820	53,320	10,500	.....
Establishment	73,706	48,429	25,277	.....
Tools and plant	3,183	1,064	2,119	...
Total	1,43,237	1,05,118	38,119	.....
Share of collection charges	52,991	52,529	462	.....
Total	1,96,228	1,57,647	38,581	.....

The gross revenue exceeded that of the previous year by Rs. 6,236, but owing to increased charges on account of maintenance and repairs, and establishment, there is a decrease in the net revenue of Rs. 32,345.

The increased expenditure on establishment is due chiefly to the classification of the Násik District as Imperial, and partly to there being smaller expenditure upon works debited to the Capital account in Khándesh Irrigation District, in which there was an increase in actual establishment during the year.

30. A complete list of the irrigation tanks in the Belgaum Collectorate having been prepared during the year is printed as an Appendix to the report.

31. The report is illustrated by maps, which are placed at the end of the report. The works are shown on Collectorate maps and the general map is the same as that printed with the usual Administration Report, showing localities of the different works. The order of the works in the various statements is also followed in the arrangement of the report.

Statement of Canals in the Bombay Presidency, excluding Sind.

xiii

Source of Supply of Water.	(1) NIRA CANAL.	(2) HATHMATE CANAL.	(3) D-GRAND CANAL.	(4) ODIA TANDA CANAL.	(5) WADALI CANAL.	(6) LAKSHI CANAL.	(7) KISHOR CANAL.	(8) KIDARI RIVER.	(9) JAINA CANAL.	(10) OUDH CANAL.	(11) RIVER WARRA AND RAJFALI.	(12) CHITRA CANAL.	(13) GODA CANAL, 1ST SECTION.	Remarks.
Minimum discharge of river.	K. 1,318 R. 34 H. W. 5	K. 16 R. 22 H. W. 6	K. 270 R. 244 H. W. 0.38	K. 15 R. ... H. W. ...	K. 229 Not gauged.	K. 14-82 R. 54-76 H. W. 4-55	K. 1,095-12 R. 11,245 H. W. 65-33	K. 12 R. 20 H. W. 10	K. 43-25 R. 39-42 H. W. 22-30	K. 4-54 R. 15-21 H. W. 5-27	K. 6-62 R. 15-40 H. W. 6-41	K. 25-00 R. 101-00 H. W. ...	As the official year divided the hot season into two years the river discharge is need in block type and the discharge at end of the year to show the state of the river more clearly.	
Maximum discharge of canal.	456	191	23-76	3-78	10-84	23-71	74-96	150	63-80	9-18	18-42	{ K. 146-75 R. 155-24 Distrib- utal. Godak.		
Average annual rainfall... ..Inches.	27-49	23-91	30-34	19-32	24-92	25-88	24-24	24-24	33-01	33-01	26-07	27-77	22-25	
Gross area communicated Acres.	3,07,559	44,744	28,832	8,035	25,913	27,407	17,300	37,122	3,813	3,813	1,871	18,698		
Culturable do. complete project	42,74,447	28,840	26,280	7,421	25,533	25,533	12,000	33,124	3,621	3,621	1,478	17,627		
Area irrigable at present	42,37,506	11,336	23,466	6,824	22,760	25,536	11,500	33,124	3,621	3,621	1,478	16,663		
Do. at present	1,31,985	8,000	± 9,837	± 2,357	11,280	25,533	11,500	23,477	7,061	7,061	1,478	16,663		
Sanctioned Estimate—														
Direct charges Rs.	48,79,380	4,94,765	2,38,687	14,541	3,75,189	7,37,547	1,55,080	10,37,298	3,25,902	50,324	53,803	4,05,039	17th para. 9 of the Nira Canal Report.	
Indirect charges Rs.	8,38,000	13,701	15,701	533	3,63,257	52,075	11,523	61,402	22,300	3,124	3,612	98,039	18th para. 9 of the Nira Canal Report.	
Interest during construction Rs.	11,70,734	2,37,157	2,12,354	2,411	3,63,258	87,065	...	...	...	...	...	...	19th para. 9 of the Nira Canal Report.	
Total, Estimate Rs.	63,70,549	7,62,392	4,68,402	17,785	7,60,764	8,46,687	1,67,812	10,88,640	3,48,211	50,448	57,415	5,17,800	20th para. 9 of the Nira Canal Report.	
Expenditure (Direct charges Rs.)	46,10,747	4,90,925	2,19,348	5,488	3,50,223	7,93,880	1,57,652	9,76,544	3,05,241	54,984	53,803	4,00,941	21st para. 9 of the Nira Canal Report.	
to end of 1889-90. Interest during construction	1,33,562	27,932	15,330	100	1,399	44,412	10,392	51,795	20,473	2,790	3,659	11,727	22nd para. 9 of the Nira Canal Report.	
Total, Expenditure Rs.	11,54,333	3,35,565	1,56,876	222	25,149	2,99,072	7,19,807	...	...	...	...	1,12,789	23rd para. 9 of the Nira Canal Report.	
Works as now sanctioned—														
Main Canals, Irrigation Miles.	11	21	11	8	8-62	16,57,599	1,67,854	10,28,339	3,25,714	57,733	57,412	5,25,467	24th para. 9 of the Nira Canal Report.	
Branch Canals, do. Miles.	...	...	...	...	...	...	...	...	...	...	...	...	25th para. 9 of the Nira Canal Report.	
Distributaries Miles.	132	25	21½	...	...	...	...	...	...	...	...	...	26th para. 9 of the Nira Canal Report.	
Of above—														
Navigable Canals Miles.	90	21	11	1-75	8-62	33½	16	39	19	5	6½	24	27th para. 9 of the Nira Canal Report.	
Works completed at end of 1889-90—														
Main Canals, Irrigation Miles.	...	...	...	...	...	...	...	...	...	...	...	...	28th para. 9 of the Nira Canal Report.	
Branch Canals, do. Miles.	...	...	...	...	...	...	...	...	...	...	...	...	29th para. 9 of the Nira Canal Report.	
Distributaries Miles.	107	25	14-87	...	...	...	...	...	...	...	...	...	30th para. 9 of the Nira Canal Report.	
Of above—														
Navigable Canals Miles.	...	...	...	...	...	...	...	...	...	...	...	...	31st para. 9 of the Nira Canal Report.	

II--A.

(1) 244.7 is the reduced level of the finished crest of weir.

(2) 248'- is the height to which water is annually impounded at end of monsoon by fixing standards and boards on waste weir crest.

STATEMENT I-B.

Capital Account of Irrigation Works in Deccan

Name of Work.	DURING YEAR.									
	Direct Charges.						Indirect Charges.			
	Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	Grand Total.
1	2	3	4	5	6	7	8	9	10	11
MAJOR WORKS.										
PROTECTIVE IRRIGATION WORKS.										
<i>In operation.</i>										
1. Nira Canal	2,20,106	64,133	20,028	3,04,267	529	3,03,738	...	8,979	8,979	3,12,717
2. Mhaswad Tank	3,806	652	—38	4,420	...	4,420	...	91	91	4,511
Total	2,23,912	64,785	19,990	3,08,687	529	3,08,158	...	9,070	9,070	3,17,228
<i>In progress.</i>										
3. Chankapur Tank	208	60	...	268	29	239	...	8	8	247
4. Maladevi do.	...	...	...	...	25	—25	...	...	—	—25
Total	208	60	...	268	54	214	...	8	8	222
Total, Protective Works ...	2,24,120	64,845	19,990	3,08,955	583	3,08,372	...	9,078	9,078	3,17,450
PRODUCTIVE WORKS.										
<i>In operation.</i>										
5. Hathmati Canal	...	...	...	...	...	...	...	...	...	...
6. Lower Panjra River Works ...	3,910	1,112	...	5,022	...	5,022	...	156	156	5,178
7. Kadva River Works	14,215	3,397	50	18,262	...	18,262	...	560	560	18,822
8. Pravara River Works—Lakh Canal...	1,082	758	85	1,875	...	1,875	3,126	106	3,232	5,107
9. Mutha Canals	10,005	2,848	417	13,270	...	13,270	...	399	399	13,669
10. Ekrak Tank	...	...	...	...	...	...	176	...	176	...
11. Krishna Canal	3,190	517	...	3,707	...	3,707	...	72	72	3,779
Total, Productive Works ...	32,402	9,232	502	42,136	...	42,136	3,302	1,293	4,595	46,731
Total, Major Works ...	2,56,522	74,077	20,492	3,51,091	583	3,50,508	3,302	10,371	13,673	3,64,181
MINOR WORKS AND NAVIGATION.										
<i>In operation.</i>										
12. Khari Cut	3,798	1,508	...	5,306	...	5,306	...	211	211	5,517
13. Hartala Tank	...	...	...	...	...	...	...	...	...	...
14. Mhasva Tank	...	...	...	...	...	...	...	...	...	...
15. Jajma Canals	917	265	200	1,382	...	1,382	...	37	37	1,419
16. Parsul Tank	18,270	5,481	201	21,550	...	21,550	...	767	767	22,317
17. Pravara River Works—Ojhar Canal...	2,008	676	43	3,032	...	3,032	2,209	187	3,446	3,878
18. Bhatodi Tank	...	...	...	...	...	...	...	...	...	...
19. Matoba do.	94	30	...	124	...	124	...	4	4	128
20. Kasurdi do.	...	...	...	...	...	...	...	...	...	...
21. Shirsuphal do.	—57	—18	...	—75	...	—75	...	—2	16	—59
22. Bhadavadi do.	109	36	...	145	...	145	...	5	5	150
23. Koregaon do.	1,894	640	...	2,534	...	2,534	...	90	90	2,624
24. Ashti do.	2,111	575	...	2,686	...	2,686	...	80	80	2,766
25. Revdri Canal	1,075	373	...	1,448	...	1,448	...	52	52	1,500
26. Upper Man River Works ...	5,249	1,564	424	7,237	...	7,237	...	218	218	7,456
27. Yerala River Irrigation Works ...	538	120	179	837	...	837	...	17	17	854
28. Chikhli Canal	...	...	...	...	...	...	...	...	...	...
29. Maini Tank	1,719	510	...	2,229	...	2,229	...	71	71	2,300
30. Muchkundi Tank	173	73	...	246	...	246	...	10	10	256
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	...	...	...	...	...	...
33. Dambal do.	...	...	...	...	...	...	...	...	...	...
34. Medleri do.	...	...	...	...	...	...	...	...	...	...
35. Marang do.	...	...	...	...	...	...	...	...	...	...
36. Asanli do.	5	...	...	...	...	...	...	...	...	...
37. Mavinkop do.	...	...	...	...	...	...	...	...	...	5
Total	35,894	12,123	650	48,667	...	48,667	227	1,697	1,924	50,591
<i>In abeyance.</i>										
38. Gokak Canal, Second Section ...	1,025	—89	...	1,006	...	1,006	...	—12	—12	994
Total, Minor Works and Navigation ...	36,919	12,034	650	49,673	...	49,673	227	1,685	1,912	51,585
PROVINCIAL.										
MINOR WORKS AND NAVIGATION										
<i>In operation.</i>										
39. Gokak Canal, First Section, and Storage Works	2,02,137	40,840	9,850	2,52,827	81	2,52,746	...	5,718	5,718	2,58,464
GRAND TOTAL	4,93,648	1,26,351	20,142	6,53,591	664	6,52,927	3,529	17,774	21,303	6,74,230

B.

and Gujarat for and to end of 1889-90.

TO END OF YEAR.									
Direct Charges.					Indirect Charges.				Grand Total.
Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
12	13	14	15	16	17	18	19	20	21
Rs.	Bs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
36,51,433	8,44,934	1,30,851	46,27,218	7,471	46,19,747	.....	1,35,562	1,35,562	47,55,309
15,65,473	3,39,776	64,122	19,69,371	1,473	19,67,898	7,749	52,698	60,447	20,28,345
52,16,906	11,84,710	1,94,973	65,96,589	8,944	65,87,645	7,749	1,88,260	1,96,009	67,83,654
37,370	17,524	7,261	62,155	106	62,049	.....	3,095	3,095	65,144
20,967	11,600	1,466	34,023	39	33,984	.....	2,161	2,161	36,145
58,337	29,124	8,717	96,178	145	96,033	.....	5,256	5,256	1,01,289
52,75,243	12,13,834	2,03,690	66,92,767	9,089	66,83,678	7,749	1,93,518	2,01,265	68,84,943
3,53,636	99,517	9,060	4,92,213	1,388	4,90,925	7,532	19,830	27,362	5,18,287
3,57,778	72,076	3,228	4,33,082	37	4,33,045	8,432	14,151	22,583	4,55,628
5,32,460	1,37,210	16,258	6,85,937	120	6,85,797	4,316	24,093	28,409	7,14,206
2,92,627	68,126	19,371	3,50,424	201	3,50,223	5,824	13,550	19,374	3,69,597
50,08,890	9,18,525	1,17,457	60,44,872	12,169	60,32,703	52,087	1,74,460	2,26,547	62,59,250
10,07,089	2,12,609	9,713	12,29,311	1,194	12,28,117	62,968	42,821	1,05,289	13,33,406
6,54,564	1,37,634	1,682	7,93,880	...	7,93,880	17,222	27,190	44,412	8,38,292
82,07,353	16,45,597	1,76,769	1,00,29,719	15,029	1,00,14,690	1,58,381	3,15,595	4,73,976	1,04,88,666
1,34,82,506	23,59,431	3,80,459	1,67,22,496	24,118	1,66,98,368	1,66,130	5,09,111	6,75,241	1,73,73,609
1,25,480	30,220	2,133	1,57,833	181	1,57,652	4,863	5,339	10,202	1,67,854
33,437	11,936	2,579	47,952	4	47,948	23,052	2,382	25,434	73,382
1,02,745	26,783	1,129	1,30,707	6	1,30,701	5,026	5,203	10,229	1,40,930
7,76,082	1,87,964	12,529	9,76,565	21	9,76,544	14,443	37,352	51,795	10,28,339
1,47,863	38,101	9,605	1,95,569	68	1,95,501	1,073	5,333	6,431	2,01,932
2,20,766	74,172	4,447	3,05,385	144	3,05,241	5,806	14,667	20,473	3,25,714
2,73,382	70,008	9,355	3,52,745	690	3,52,055	19,023	13,975	26,998	3,79,053
1,49,235	35,982	2,937	1,88,154	8	1,88,146	5,579	7,000	12,579	2,00,725
31,433	8,495	884	40,812	...	40,812	3,079	1,699	4,778	45,590
1,53,857	34,288	2,861	1,91,006	...	1,91,006	5,038	6,686	11,724	2,02,730
1,56,992	53,492	2,621	2,13,106	...	2,13,106	3,535	10,240	13,775	2,26,881
30,044	7,636	218	37,898	...	37,898	.....	1,263	1,263	39,161
5,94,565	9,41,434	8,118	7,44,147	5,892	7,38,755	48,941	26,220	75,161	8,13,916
45,595	9,345	14	54,954	...	54,954	1,066	1,733	2,789	57,753
3,05,351	93,100	6,764	4,05,215	241	4,04,974	4,082	17,304	21,386	4,26,360
5,00,005	1,03,961	6,972	6,10,938	2,365	6,08,573	22,363	19,312	42,680	6,50,753
39,984	13,612	208	53,803	...	53,803	917	2,722	3,669	57,442
2,54,647	93,644	3,244	3,42,535	540	3,41,995	3,074	18,506	21,580	3,63,575
1,11,030	26,131	2,294	1,39,455	267	1,39,188	11,228	4,072	15,300	1,54,488
6,885	1,690	129	8,714	...	8,714	.....	258	258	8,972
7,020	1,755	140	8,915	...	8,915	13	351	364	9,279
49,262	10,769	878	60,909	62	60,847	.....	2,099	2,099	62,946
61,681	15,324	1,155	78,360	6	78,354	.....	7,795	7,795	81,149
1,26,596	31,841	2,825	1,61,262	14	1,61,248	.....	6,350	6,350	1,67,598
48,805	10,881	1,055	60,741	...	60,741	.....	1,718	1,718	62,459
21,965	5,762	323	27,750	138	27,612	2,083	1,152	2,235	30,847
43,71,697	11,38,316	85,417	55,95,430	10,147	55,85,283	1,78,294	2,16,251	3,94,545	59,79,828
90,080	69,386	14,246	1,73,712	...	1,73,712	740	13,148	13,888	1,87,600
44,61,777	12,07,702	99,663	57,69,142	10,147	57,58,995	1,79,034	2,29,399	4,08,433	61,67,428
5,76,286	1,21,743	23,595	7,21,624	132	7,21,492	948	18,584	18,932	7,40,424
1,85,20,659	41,88,876	5,03,717	2,32,13,252	34,397	2,31,78,855	3,45,512	7,57,094	11,02,606	2,42,81,461

R. R. HUTCHINSON,
Examiner, Public Works Accounts.

*Statement showing the Financial Results of Irrigation Works in
Realizations under Main Heads of*

Name of Work.	REVENUE (ACTUAL RECEIPTS).										Revenue	
	Irrigation.			Navigation.	Plantations.	Water-power.	Miscellaneous.	Total.	Refunds of Revenue.	Gross Revenue less Refunds.	Estate	
	Water-rates directly paid.	Share of Land Revenue.	Total.								Direction.	Executive.
1	2	3	4	5	6	7	8	9	10	11	12	13
MAJOR WORKS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Protective Irrigation Works.												
1. Nira Canal	25,572	...	25,572	...	519	...	1,472	27,563	19	27,544	253	4,214
2. Mhasvad Tank	16,492	...	16,493	...	65	...	1,616	18,173	5	18,168	120	2,375
Total	42,064	...	42,064	...	584	...	3,088	45,736	24	45,712	373	6,739
Productive Works.												
5. Hathmati Canal	4,723	...	4,723	...	465	...	7	5,195	...	5,195	48	601
6. Lower Panjhra River Works	8,751	*6,628	15,379	...	273	...	304	15,956	...	15,956	68	1,217
7. Kadva River Works	9,423	†594	10,017	...	206	...	30	10,332	...	10,332	24	257
8. Pravara River Works—Lakh Canal	1,884	...	1,884	...	160	...	4	2,048	...	2,048	36	480
9. Mutha Canals	1,08,211	...	1,08,211	...	1,394	3,600	93,043	2,06,248	336	2,05,912	852	21,303
10. Ekrdk Tank	8,118	...	8,118	...	5,177	...	3,449	16,744	...	16,744	121	1,946
11. Krishna Canal	26,836	...	26,836	...	2,478	...	301	29,615	33	29,582	130	1,795
Total	1,67,946	7,222	1,75,168	...	10,332	3,600	97,138	2,86,138	369	2,85,769	1,279	27,599
Total, Major Works	2,10,010	7,222	2,17,232	...	10,816	3,600	1,00,226	3,31,874	393	3,31,481	1,652	34,388
MINOR WORKS AND NAVIGATION.												
12. Khari Cut... ..	4,354	...	4,354	...	286	...	80	4,720	...	4,720	37	776
13. Hartala Tank	992	...	992	...	22	...	808	1,822	2,516	694	...	169
14. Mhasva do.	653	...	653	...	100	...	67	820	...	820	12	...
15. Jameda Canals	7,137	...	7,137	...	370	...	49	7,556	...	7,556	98	2,063
16. Parsul Tank	...	...	...	...	...	...	15	15	...	15	...	...
17. Pravara River Works—Ojha Canal	7,820	†76	7,896	...	86	...	98	8,060	...	8,060	57	1,037
18. Bhadodi Tank	2,040	†146	2,186	...	11	...	322	2,519	...	2,519	27	513
19. Matoba do.	8,213	...	8,213	...	135	...	...	8,348	...	8,348	20	497
20. Kasurdi do.	312	...	312	...	22	...	103	437	...	437	3	91
21. Shirsaphal do.	3,226	...	3,226	...	297	...	...	3,523	...	3,523	25	632
22. Bhadalvadi do.	3,232	...	3,232	...	95	...	40	3,367	...	3,367	21	616
23. Koregaon do.	213	...	213	...	3	...	...	216	...	216	8	209
24. Ashti do.	4,915	...	4,915	...	399	...	142	5,456	...	5,456	57	1,089
25. Revāri Canal	3,056	...	3,056	...	66	...	23	3,145	...	3,145	24	480
26. Upper Ma River Works	5,646	...	5,646	...	161	...	19	5,826	...	5,826	23	263
27. Yerla River Irrigation Works	7,644	...	7,644	...	622	...	4	8,270	...	8,270	35	382
28. Chikhli Canal	1,414	...	1,414	...	38	...	...	1,452	...	1,452	4	32
29. Maini Tank	9,328	...	9,328	...	240	...	34	9,602	...	9,602	31	369
30. Muchkundi do.	19	...	19	...	156	...	5	180	...	180	...	...
32. Gadikeri do.	...	*2,127	2,127	...	...	...	...	2,127	172	1,955	...	...
33. Dambal do.	547	*666	1,213	...	523	...	...	1,736	...	1,736	...	...
34. Medleri do.	445	...	445	...	...	...	...	445	...	445	...	...
35. Madag do.	2,218	...	2,218	...	157	...	...	2,375	...	2,375	...	...
36. Asundi do.	225	*472	697	...	...	...	...	697	...	697	...	...
37. Marinkop do.	...	*856	856	...	...	...	5	861	...	861	...	...
Total, Minor Works and Navigation	73,649	4,343	77,992	...	3,789	...	1,814	83,595	2,688	80,907	482	9,243
PROVINCIAL.												
MINOR WORKS AND NAVIGATION.												
39. Gokak Canal, First Section, and Storage Works.	6,843	...	6,843	...	36	3,450	142	10,471	...	10,471	38	964
GRAND TOTAL	2,90,502	11,565	3,02,067	...	14,641	7,050	1,02,182	4,25,940	3,081	4,22,859	2,172	44,595

* Assessments of the revenue year 1889-90.

† Enhanced land revenue.

N.B.—The division of Establishment charges between Revenue management and maintenance is made in accordance

C.

Deccan and Gujarat for the year ending 31st March 1890.
Revenue and Working Expenses.

WORKING EXPENSES.															
Management.			Maintenance and Repairs.												
Bishment.		Total Revenue Maintenance.	Establishment.				Works.	Repairs.	Sanitaria.	Tools and Plant.	Plantations.	Total Cost of Maintenance.	Indirect Charges.	Grand Total, Working Expenses.	Net Revenue.
Navigation.	Civil Officers.		Direction.	Executive.	Medical.	Total.									
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
...	1,279	5,746	226	3,769	...	3,995	...	14,273	...	200	1,708	20,176	1,185	27,107	437
...	919	3,614	70	1,512	...	1,582	...	5,880	...	75	88	8,072	599	12,285	5,883
...	2,198	9,360	296	5,281	...	5,577	...	20,153	...	75	283	2,155	1,784	39,892	6,320
...	236	885	77	963	...	1,040	...	3,760	...	104	29	5,334	238	6,455	-1,260
...	1,406	2,691	52	944	...	996	...	3,524	...	100	460	5,080	319	8,090	7,866
...	472	733	62	655	...	717	...	2,754	...	158	130	3,779	139	4,671	5,661
...	94	610	47	642	...	689	...	2,539	...	83	216	3,527	169	4,306	-2,258
...	5,385	27,540	402	10,051	...	10,453	...	40,913	-449	2,811	901	54,629	4,565	86,734	1,19,178
...	567	2,634	117	1,869	...	1,9-6	...	7,110	...	99	835	10,030	567	13,231	3,513
...	1,656	3,581	169	2,319	...	2,488	...	9,186	...	403	151	12,995	618	17,194	12,888
...	9,816	38,694	926	17,443	...	18,369	...	69,786	...	58	3,431	3,730	95,374	6,613	1,40,681
...	12,014	48,054	1,222	22,724	...	23,946	...	89,939	...	133	3,719	5,885	1,23,622	8,397	1,51,408
...	218	1,031	23	474	...	497	...	1,924	...	50	66	2,537	183	3,751	969
...	89	89	6	98	...	44	...	193	...	...	...	257	6	332	-1,026
...	33	214	17	223	...	240	...	624	149	...	335	1,398	59	1,671	-851
...	346	2,507	60	1,356	...	1,316	...	5,301	...	100	...	6,717	437	9,711	-2,155
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15
...	391	1,485	43	793	...	836	...	3,216	...	41	129	4,232	270	5,977	2,103
...	114	654	20	368	...	388	...	1,440	...	50	114	1,992	130	2,776	-257
...	411	928	10	242	...	252	...	925	...	100	83	1,360	108	2,396	5,992
...	16	110	...	36	...	37	...	149	...	49	...	235	18	363	74
...	161	838	11	287	...	298	...	1,102	...	100	91	1,591	136	2,505	959
...	162	799	8	235	...	243	...	894	...	100	80	1,317	123	2,239	1,128
...	11	228	6	128	...	144	...	455	...	17	...	616	51	577	-679
...	314	1,450	39	760	...	799	...	2,902	...	48	293	4,042	272	5,774	-318
...	153	637	18	314	...	330	...	1,289	...	50	33	1,702	117	2,476	669
...	282	573	43	509	...	552	...	1,974	...	150	293	2,909	118	3,500	2,226
...	382	799	79	875	...	954	...	3,250	...	150	568	4,922	192	5,913	2,357
...	71	107	30	260	...	280	...	1,060	...	50	61	1,451	44	1,602	-150
...	469	869	59	693	...	752	...	2,704	...	100	304	3,860	161	4,890	4,712
...	1	1	32	221	...	233	...	1,008	...	...	54	1,315	35	1,351	-1,171
...	213	213	...	...	...	...	...	...	...	...	...	...	...	213	1,742
...	94	94	11	73	...	84	19	394	...	...	...	447	12	553	1,183
...	22	22	23	153	...	176	...	765	...	...	...	941	25	986	-543
...	111	111	45	239	...	344	...	1,303	...	...	189	1,839	48	1,997	378
...	58	58	15	99	...	114	...	497	...	...	...	611	16	685	12
...	86	86	...	...	...	...	...	...	...	...	...	...	...	86	775
...	4,208	12,933	597	8,336	...	8,933	19	33,321	149	1,205	2,633	46,260	2,611	62,804	18,103
...	515	1,517	18	447	...	465	...	1,645	...	200	217	2,527	205	4,249	6,222
...	16,737	63,504	1,837	31,507	...	33,344	19	1,24,905	282	5,124	8,735	1,72,400	11,213	2,47,126	1,75,733

† Includes Rs. 107 on account of allowance for collection of water-rates shown under IV. — Establishment in the Administration Accounts for 1889-90.

with the orders contained in Government of India No. 98—A. I., dated 19th August 1884.

F. R. HUTCHINSON, •
 Examiner, Public Works Accounts.

II—C.

Statement showing the Financial Results of Irrigation Works in the Deccan and Gujarat for the year 1889-90 based on Actual Receipts.

Principal Results of Operations for the year ended 31st March 1890.

Irrigation Works.	Direct and Indirect Capital Outlay to end of 1889-90.	Gross Receipts, Direct and Indirect, from all sources.	Working Expenses, Direct and Indirect.	Net Revenue (excluding Charges for Interest).	Interest at 4 per cent. on Direct Capital Outlay at commencement of year and at 2 per cent. on Outlay during the year.	SURPLUS REVENUE AFTER PAYING INTEREST ON DIRECT CAPITAL OUTLAY.		EXCESS CHARGES, INCLUDING INTEREST ON DIRECT CAPITAL OUTLAY.	
						Amount.	Percentage on Total Sum at Charge.	Amount.	Percentage on Total Sum at Charge.
1	2	3	4	5	6	7	8	9	10
MAJOR WORKS.									
PROTECTIVE IRRIGATION WORKS.									
<i>In operation.</i>									
1. Nira Canal	47,55,309	27,444	27,107	437	1,75,715	..	..	1,73,278	3.09
2. Mhasvad Tank	20,25,945	18,168	12,285	5,883	78,627	..	..	72,744	2.84
Total	67,81,254	45,712	39,392	6,320	2,57,342	..	..	2,51,022	3.91
<i>In progress.</i>									
3. Chankapur Tank	65,144	....	....	....	2,477	..	..	2,477	2.96
4. Maladevi do.	86,145	....	....	....	1,360	..	..	1,360	3.34
Total	1,01,289	....	....	....	3,837	..	..	3,837	3.05
Total, Protective Works	68,84,943	45,712	39,392	6,320	2,61,179	..	..	2,54,859	3.90
PRODUCTIVE WORKS.									
<i>In operation.</i>									
5. Hathmati Canal	5,18,287	6,195	6,455	-1,260	10,637	..	..	20,897	2.31
6. Lower Pancha River Works	4,55,053	16,356	6,900	7,506	17,221	..	..	2,355	1.30
7. Kadva River Works	7,14,336	10,332	9,071	5,601	27,067	..	..	21,466	2.19
8. Pravara River Works—Lakh Canal	3,69,397	2,918	4,306	-2,259	13,971	..	..	16,229	2.22
9. Mutha Canals	62,59,220	2,65,912	86,734	1,16,178	2,41,947	..	..	1,21,565	1.56
10. Ekkrak Tank	13,33,406	16,744	12,231	3,513	49,124	..	..	45,611	1.58
11. Krishna Canal	3,38,292	29,682	17,194	12,388	31,681	..	..	19,233	1.27
Total, Productive Works	1,04,83,666	2,85,769	1,40,681	1,45,068	3,00,744	..	..	2,54,666	1.57
Total, Major Works	1,73,78,609	3,31,481	1,80,073	1,51,408	6,60,923	..	..	5,09,525	2.97
MINOR WORKS AND NAVIGATION.									
<i>In operation.</i>									
12. Khari Cut	1,07,584	4,720	3,751	969	6,200	..	..	5,231	2.52
13. Harsila Tank	73,383	-604	332	-1,026	1,913	..	..	2,344	3.18
14. Mhasva do.	1,40,130	820	1,671	-851	5,238	..	..	6,079	2.91
15. Jambha Canals	10,22,330	7,546	9,711	-2,155	39,084	..	..	41,189	2.06
16. Parsal Tank	5,01,992	15	....	15	7,880	..	..	7,874	3.27
17. Pravara River Works—Ojhar Canal	5,25,714	8,080	5,977	2,103	12,149	..	..	10,046	1.93
18. Bhakodi Tank	3,79,653	2,519	2,776	-257	14,083	..	..	14,569	2.27
19. Mitola do.	5,00,725	8,243	2,396	5,823	7,523	..	..	1,671	0.61
20. Kasurdi do.	45,590	437	863	71	1,633	..	..	1,559	1.74
21. Bhirsaphal do.	2,02,739	3,233	2,565	668	7,642	..	..	6,934	2.30
22. Bhakavadi do.	2,25,881	3,267	2,229	1,038	8,321	..	..	7,293	2.41
23. Koregaon do.	39,161	216	365	-679	1,465	..	..	2,144	3.20
24. Ashti do.	8,13,916	5,456	5,774	-318	29,490	..	..	29,814	2.66
25. Revari Canal	57,753	3,145	2,476	669	2,169	..	..	1,500	1.41
26. Upper Man River Works	4,26,360	5,630	3,610	2,026	10,035	..	..	13,820	2.21
27. Yerla River Irrigation Works	6,50,733	8,270	5,913	2,357	24,328	..	..	21,969	2.55
28. Chikhli Canal	67,442	1,452	1,002	-150	2,152	..	..	2,302	2.12
29. Maini Tank	3,65,575	9,032	4,800	4,232	15,683	..	..	8,222	1.51
30. Muchkundi Tank	1,64,488	130	1,351	-1,271	5,563	..	..	6,734	3.45
31. Nilgund Tank	8,972	....	....	....	349	..	..	349	2.09
32. Gadikori do.	8,279	1,955	213	1,742	337	1,385	..	1,251	1.45
33. Damal do.	62,646	1,736	553	1,183	2,494	..	..	3,077	3.28
34. Medleri do.	81,149	445	888	-543	3,124	..	..	6,072	1.88
35. Madag do.	1,67,593	2,372	1,997	375	6,450	..	..	6,418	3.13
36. Anandi do.	62,459	607	635	12	2,430	..	..	3,229	0.59
37. Masinkop do.	90,847	861	86	775	1,104	..	..	....	....
Total	58,79,883	80,907	62,804	18,103	2,22,438	..	..	2,04,356	2.21
<i>In abeyance.</i>									
38. Gokak Canal, Second Section	1,87,600	....	....	....	6,923	..	..	6,923	2.53
Total, Minor Works and Navigation	61,67,483	80,907	62,804	18,103	2,29,361	..	..	2,11,279	2.22
PROVINCIAL.									
MINOR WORKS AND NAVIGATION.									
<i>In operation.</i>									
39. Gokak Canal, First Section, and Storage Works	7,40,424	10,471	4,240	6,229	23,505	..	..	17,533	2.07
GRAND TOTAL	2,42,81,461	4,32,869	2,47,126	1,75,733	9,14,094	..	..	7,38,361	2.11

* The sum at charge being minus, no percentage can be calculated.

F. R. HUTCHINSON,

Examiner, Public Works Accounts.

III—C.

Demands and Realizations during the year 1889-90 in Deccan and Gujarat.

Irrigation Works.	Balance of Demands unrealized at commencement of year.	DEMANDS OF THE YEAR.				Total, including Balance at commencement of year.	Deduct Remissions, not including Cash Refunds.	Net Total.	Deduct Amount unrealized at close of year.	Actual Realizations of the year.
		Rabi, 1888-89.	Kharif, 1889-90.	Miscellaneous Receipts.	Total.					
1	2	3	4	5	6	7	8	9	10	11
MAJOR WORKS.										
<i>Protective Irrigation Works.</i>										
1. Nira Canal ...	...	22,271	9,129	1,991	33,391	33,391	5,833	27,558	—5	27,563
2. Mhasvad Tank ...	7,707	5,743	10,467	1,358	17,558	25,255	635	24,630	6,457	18,173
Total ...	7,707	28,014	19,586	3,349	50,949	58,656	6,468	52,188	6,452	45,736
<i>Productive Works.</i>										
5. Hathmati Canal ...	197	2,018	2,809	472	5,299	5,496	55	5,441	246	5,195
6. Lower Pánjhra River Works ...	100	1,821	6,952	577	9,350	9,450	...	9,450	122	9,328
7. Kádva River Works ...	1,308	2,665	7,577	323	10,565	11,873	...	11,873	2,135	9,738
8. Pravara River Works—Lákh Canal ...	...	785	1,115	164	2,064	2,064	...	2,064	16	2,048
9. Mutha Canals ...	14,010	7,351	1,07,121	99,180	2,13,652	2,27,682	133	2,27,529	21,281	2,06,248
10. Ekrík Tank ...	...	3,011	5,433	9,091	17,535	17,535	...	17,535	791	16,744
11. Krishna Canal ...	4,742	5,236	22,241	2,779	30,256	34,998	...	34,998	5,883	29,615
Total ...	20,557	22,587	1,53,948	1,12,586	2,68,721	3,09,078	188	3,08,890	29,974	2,78,916
Total, Major Works ...	28,664	50,901	1,72,834	1,15,935	3,39,670	3,67,734	6,656	3,61,078	36,426	3,24,652
MINOR WORKS AND NAVIGATION.										
12. Khári Cut... ..	797	...	13,360	366	13,726	14,523	7,900	6,623	1,903	4,720
13. Hartála Tank ...	850	182	26	864	1,072	1,922	...	1,922	100	1,822
14. Mhasva do. ...	...	582	71	167	820	820	...	820	...	820
15. Jámá Canals ...	1,338	3,957	2,231	419	6,607	7,945	...	7,945	589	7,556
16. Parsul Tank ...	...	...	...	15	15	15	...	15	...	15
17. Pravara River Works—Ojhar Canal ...	52	3,634	4,213	186	8,038	8,090	...	8,090	86	8,004
18. Bháodi Tank ...	31	1,163	846	364	2,373	2,404	...	2,404	31	2,373
19. Mátoba do. ...	...	1,577	6,636	135	8,348	8,348	...	8,348	...	8,348
20. Kasurdi do. ...	...	251	61	125	437	437	...	437	...	437
21. Shirsuphal Tank... ..	...	1,798	1,428	297	3,523	3,523	...	3,523	...	3,523
22. Bhádalvadi do. ...	...	548	2,704	135	3,387	3,387	...	3,387	20	3,367
23. Koregaon do. ...	...	158	55	3	216	216	...	216	...	216
24. Ashti do. ...	716	2,056	3,063	545	5,664	6,380	...	6,380	924	5,456
25. Revári Canal ...	...	1,763	1,390	89	3,242	3,242	20	3,222	77	3,145
26. Upper Mán River Works—Yerla River Irrigation Works ...	49	1,706	3,945	180	5,831	5,880	...	5,880	54	5,826
27. Chikhli Canal ...	434	2,573	4,715	626	7,914	8,398	4	8,394	124	8,270
28. Maini Tank ...	19	200	1,198	38	1,436	1,455	...	1,455	3	1,452
29. Muchkundi Tank ...	2,169	1,524	5,904	274	7,702	9,871	...	9,871	269	9,602
30. Gadikeri Tank ...	...	...	19	161	180	180	...	180	...	180
31. Dámbal do. ...	...	278	529	523	1,330	1,330	260	1,070	...	1,070
32. Medleri do. ...	...	19	426	...	445	445	...	445	...	445
33. Madag do. ...	223	881	1,126	157	2,164	2,387	...	2,387	12	2,375
34. Asundi do. ...	...	58	167	...	225	225	...	225	...	225
35. Mávinkop do. ...	...	...	...	...	5	5	...	5	...	5
Total, Minor Works and Navigation ...	6,723	24,908	54,118	5,674	84,700	91,428	8,184	83,244	3,992	79,252
PROVINCIAL.										
<i>Minor Works and Navigation.</i>										
36. Gokák Canal, First Section, and Storage Works ...	14	2,043	4,782	3,628	10,453	10,467	...	10,467	—4	10,471
GRAND TOTAL ...	34,806	77,852	2,31,734	1,25,237	4,34,823	4,89,629	14,840	4,54,789	40,414	4,14,375

*Including Rs. 1,396 on account of rabi of 1889-90 shown in Canal Return No. IX.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

IV—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarāt for the year ended 1889-90 based on the assessment of the year.

Principal Results and Operations for the year ended 31st March 1890.

Irrigation Works.	Capital Outlay (direct and indirect) to end of year.	REVENUE ASSESSED DURING THE YEAR.									Working Expenses, direct and indirect.	Net assessed revenue of the year.	Percentage on Capital outlay to end of year.	
		Direct assessed Revenue.*								Indirect revenue—(Land Revenue due to operation of canal).				Grand Total.
		Occupier's rate.	Owner's rate.	Plantations.	Water-power.	Navigation.	Miscellaneous.	Total.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
MAJOR WORKS.														
Protective Irrigation Works.														
1. Nira Canal ...	47,55,309	24,287	...	519	...	...	1,473	36,678	...	36,678	27,107	—429	0.01	
2. Mhasvad Tank ...	20,28,345	14,908	...	65	...	...	1,293	16,327	...	16,327	12,285	4,042	0.20	
Total ...	67,83,654	39,195	...	584	...	...	2,766	43,005	...	43,005	39,392	3,613	0.05	
Productive Works														
6. Hathmati Canal ...	5,18,267	5,551	...	405	...	...	7	6,123	...	6,123	8,465	—332	0.06	
6. Lower Panjira River Works ...	4,55,923	11,198	...	273	...	...	304	11,775	46,623	18,403	8,090	10,313	2.26	
7. Kadra River Work ...	7,14,206	10,458	...	235	...	...	38	10,781	1594	11,375	4,671	6,704	0.94	
8. Pravara River Works—Tash Canal ...	3,69,597	1,259	...	160	...	...	4	1,423	...	1,423	4,306	—2,883	0.79	
9. Matba Canals ...	82,69,250	1,21,230	...	1,894	3,600	...	94	2,20,419	...	2,20,419	86,724	1,33,685	2.14	
10. Elvide Tank ...	13,33,408	9,441	...	5,177	...	...	3,914	18,532	...	18,532	12,231	5,301	0.49	
11. Krishna Canal ...	5,38,292	29,068	...	2,478	...	...	601	32,855	...	32,855	17,104	15,751	1.51	
Total ...	1,04,83,666	1,38,852	...	10,332	3,600	...	98,754	3,01,433	7,222	3,08,655	1,40,631	1,67,973	1.00	
Total, Major Works ...	1,72,73,320	2,28,508	...	10,816	3,600	...	1,01,519	3,44,443	7,222	3,51,665	1,80,073	1,71,592	1.00	
MINOR WORKS AND NAVIGATION.														
12. Khari Cut ...	1,67,854	5,470	...	226	...	...	80	5,836	...	5,836	3,751	2,085	1.24	
13. Harada Tank ...	78,382	150	...	28	...	...	842	1,014	...	1,014	832	182	0.93	
14. Mhasva do ...	1,40,830	432	...	100	...	...	67	619	...	619	1,071	—1,052	0.75	
15. Janda Canals ...	10,28,336	4,973	...	370	...	...	49	5,392	...	5,392	9,711	—4,319	0.42	
16. Parsul Tank ...	2,01,932	...	...	...	...	...	15	15	...	15	...	15	0.01	
17. Pravara River Works—Ojhar Canal ...	8,25,714	9,090	...	88	...	...	100	9,132	176	9,308	5,977	3,331	0.99	
18. Dhadi Tank ...	3,19,053	3,708	...	11	...	...	353	4,162	1146	4,308	2,776	1,532	0.40	
19. Mitha do ...	2,00,725	5,145	...	135	...	...	...	9,290	...	9,290	2,396	6,844	3.43	
20. Kadam do ...	45,390	510	...	32	...	...	103	635	...	635	363	272	0.90	
21. Shirsuphal do ...	2,02,730	3,189	...	297	...	...	...	3,456	...	3,456	2,565	921	0.45	
22. Bhadavadi do ...	2,26,891	3,226	...	95	...	...	49	3,961	...	3,961	2,239	1,722	0.76	
23. Koregaon do ...	59,131	743	...	3	...	...	142	746	...	746	395	—149	0.38	
24. Ashi do ...	8,13,916	4,523	...	399	...	...	146	5,063	...	5,063	5,774	—706	0.09	
25. Bevari Canal ...	57,753	4,657	...	06	...	...	23	4,746	...	4,746	2,476	2,270	3.93	
26. Upper Main River Works—Yeta River Irrigation Works ...	4,26,360	6,413	...	161	...	...	19	6,595	...	6,595	3,790	2,805	0.70	
27. Yeta River Irrigation Works ...	6,50,753	8,227	...	622	...	...	4	8,853	...	8,853	5,013	2,940	0.45	
28. Chikhli Canal ...	57,442	1,532	...	38	...	...	...	1,570	...	1,570	1,002	—32	0.06	
29. Main Tank ...	3,63,573	7,818	...	924	...	...	24	7,792	...	7,792	4,890	2,902	0.59	
30. Muchkund Tank ...	1,54,488	19	...	156	...	...	...	159	...	159	1,351	—1,171	0.76	
32. Gadikeri do ...	9,278	...	...	...	...	...	...	...	12,127	2,127	213	1,913	20.63	
33. Dambal do ...	62,946	600	...	523	...	...	...	1,129	1606	1,795	653	1,142	1.97	
34. Medleri do ...	21,149	457	...	...	...	...	...	457	...	457	...	...	0.65	
35. Madag do ...	1,67,593	1,879	...	157	...	...	...	2,086	...	2,086	1,697	39	0.02	
36. Asundi do ...	62,459	221	...	...	...	...	...	231	1452	703	683	18	0.03	
37. Mavinkop do ...	30,847	...	...	...	...	...	5	5	1656	361	38	776	2.51	
Total, Minor Works and Navigation.	69,70,856	77,256	...	3,789	...	...	1,835	32,080	4,343	37,273	62,804	24,460	0.41	
PROVINCIAL.														
Minor Works and Navigation.														
39. Gokak Canal, First Section, and Storage Works ...	7,40,424	7,272	...	80	3,450	...	142	10,900	...	10,900	4,240	6,651	0.90	
GRAND TOTAL ...	2,39,83,600	3,13,068	...	14,641	7,060	...	1,03,546	4,38,273	11,565	4,49,838	2,47,126	2,02,712	0.55	

*Excluding remissions and free grants shown in Canal Returns No. V for kharif and rabi seasons of 1889-90.

†Irrigation share of the land revenue assessments.

‡Enhanced land revenue.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

I-E.

[illegible]

II—E.

Statement showing Incidence of Working Expenses and Assessed Water Revenue on Canals in the Bombay Presidency, excluding Sind, during the year 1899-00.

No.	Name of Works.	WATER-RATE ASSESSED, 1898-99.					Gross Revenue from all sources.	Working Expenses, including Indirect.		WORKING EXPENSES.			OCCUPYER'S RATE.		TOTAL WATER-RATE, DIRECT AND INDIRECT.		Remarks.	
		Average of the Discharge of the Canal in Cubic Feet per Second.	Owner's.	Total Direct.	Indirect.	Total of Direct and Indirect.		Rs.	Rp.	Per cent. Revenue.	Per Acre irrigated.	Per Cubic Second of actual flow.	Per Acre irrigated.	Per Cubic Second of actual flow.	Rs.	Rp.		
MAJOR WORKS.																		
Protective Works.																		
1	Nira Canal.	130	21,087	...	21,087	...	26,673	27,107	21,930	102	1.24	230	1.12	200	1.12	200		
2	Mhaswad Tank	44.70	14,969	...	14,969	...	10,327	10,327	7,723	75	1.81	274	2.30	384	2.30	384		
	Total	.....	36,056	.....	36,056	.....	43,005	37,434	29,653	92	1.57	.....	1.38	.....	1.38	.....		
3	Mahadadi Canal	4.5	5,051	.....	5,051	.....	13,463	13,463	10,614	106.44	2.75	148.44	2.40	125.58	2.40	125.58		
4	Lower Panchajanya River Works	5.90	11,108	.....	11,108	.....	17,826	17,826	14,444	44	2.53	1,371	4.88	1,898	4.88	1,898		
5	Wagholi Tank	14.55	8,932	.....	8,932	.....	9,817	9,817	8,331	31	1.22	104	3.61	172	3.61	172		
6	Kadva River Works.	5.00	1,304	.....	1,304	.....	1,919	1,919	1,106	116	3.22	207	2.55	254	2.55	254		
7	Wagholi Canal	18.79	1,304	.....	1,304	.....	4,806	4,806	3,322	303	1.37	357	3.98	468	3.98	468		
8	Parvati River Works—Lakhi Canal	13.81	1,250	.....	1,250	.....	2,940.19	2,940.19	1,833	79	6.60	419	9.00	830	9.00	830		
9	Mutha Canal	1.51	1,304	.....	1,304	.....	1,919	1,919	1,333	53	2.72	346	7.79	609	7.79	609		
10	Krishna Canal	49.74	20,500	.....	20,500	.....	25,500	25,500	17,134	53	4.50	346	6.62	609	6.62	609		
	Total	.....	1,88,832	.....	1,88,832	.....	3,08,560	1,40,831	27,639	45	5.93	.....	6.82	.....	6.82	.....		
	Total, Major Works	.....	2,28,566	.....	2,28,566	.....	3,53,560	1,50,073	56,381	51	3.19	.....	4.65	.....	4.65	.....		
MINOR WORKS AND NAVIGATIONS.																		
12	Edahat Cut	0.30	5,470	.....	5,470	.....	5,539	5,539	3,751	64.27	1.65	625.16	2.40	911.66	2.40	911.66		
13	Haridra Tank	0.30	150	.....	150	.....	1,014	1,014	1,332	68	6.03	68	2.27	500	2.27	500		
14	Mhaswa Tank	31.09	4,973	.....	4,973	.....	5,111	5,111	4,711	180	4.80	312	2.40	1,100	2.40	1,100		
15	Parvati River Works—Ojha Canal	2.20	8,932	.....	8,932	.....	9,817	9,817	9,711	.....	.....	.....	.....	.....	.....	.....		
16	Wagholi Tank	2.64	1,304	.....	1,304	.....	1,919	1,919	2,977	65	.....	.....	.....	.....	.....	.....		
17	Parvati River Works—Ojha Canal	8.02	8,932	.....	8,932	.....	9,817	9,817	3,751	31	.....	.....	.....	.....	.....	.....		
18	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
19	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
20	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
21	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
22	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
23	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
24	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
25	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
26	Kandri do.	.....	4,312	.....	4,312	.....	4,389	4,389	2,977	50	.....	.....	.....	.....	.....	.....		
27	Yeta River—Trigun Works	28.58	8,227	.....	8,227	.....	8,653	8,653	5,013	54	2.52	388	4.5	688	4.5	688		
28	Mutha Canal	7.98	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
29	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
30	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
31	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
32	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
33	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
34	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
35	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
36	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
37	Mutha Canal	.....	1,304	.....	1,304	.....	1,919	1,919	1,431	67	3.07	268	4.6	290	4.6	290		
	Total	.....	77,256	.....	77,256	.....	87,273	87,273	62,804	72	2.52	.....	.....	.....	.....	.....		
	Total, Minor Works	.....	77,256	.....	77,256	.....	87,273	87,273	62,804	72	2.52	.....	.....	.....	.....	.....		
38	Gokak Canal, 1st Section	31.40	7,972		7,972		10,000	4,249	4,249	30	1.02	134.93	1.75	231	1.75	231		
	GRAND TOTAL		3,13,056		3,13,056		4,99,893	2,47,190	86,550	95	2.99							

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III-E.

Statement of Quantity and Value of Crops irrigated in the Decan and Gujardt during the year 1889-90.

	(1) NRYAL CANAL.		(2) MARSYAD TANE.		(3) HATHMAT CANAL.		(4) LOWER PANCHRA RIVER WORKS.		(5) KADVA RIVER WORKS.				(6) PRAYARA RIVER WORKS-LAKH CANAL.		(7) MUTHA CANALS.	
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.
Gardens and Orchards.	100	1,473	109	2,180	1	50	30	104	198	4,960	29	725	70	1,750	200	4,921
Sugarcane	44	2,985	40	2,600	2	50	574	31,024	13	660	4	200	3	150	36	67,191
	143	36,760	308	27,790	4	400	44	2,175	248	18,600	21	1,575	6	450	32	16,541,47.
	3,448	51,100	945	23,625	684	14,375	223	2,772	601	9,015	38	570	107	2,955	49	1,331
	11	84	84	840	451	11,275	51	797	40	1,150	2	50	12	120	42	175
	174	1,188	226	3,390	877	26,310	34	322	3	80	3	30	6	60	6	840
	6,925	1,56,851	1,349	13,400	14	280	34	322	3	80	3	30	6	60	6	840
	107	1,070	107	1,070	5	100	7	83	...	...	...	...	...	...	...	...
	6,172	32,883	106	1,064	11	220	211	1,714	118	944	56	448	43	344	31	2678
	103	685	...	...	...	...	...	...	...	...	...	...	...	...	...	51,284
	1,630	24,628	287	3,731	240	6,000	7	65	179	3,043	8	136	13	221	5	1,001
	262	1,353	49	588	...	...	3	23	...	...	...	...	...	...	...	24,442
	1,134	44,465	1,874	74,960	1	40	517	8,465	541	13,525	51	1,275	72	1,800	3	120
	113	159	2	25	...	...	...	...	26	250	2	20	1	10	...	63
	388	8,688	514	25,700	12	...	27	301	154	2,310	30	450	34	510	44	1,760
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38
	2	20	...	...	2	100	198	4,710	8	120	14	210	...	...	...	190
	10	57	...	...	...	...	...	...	120	1,800	...	...	...	...	...	8
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10	206	5	250	1	50	...	...	1	30	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	7	38	2	20	...	...	52	635	...	...	...	...	...	...	...	...
	7	121	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10	206	5	250	1	50	...	...	1	30	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	247	7,152	204	6,120	1	50	41	1,200	38	570	3	45	4	60	13	520
	24	779	2	60	138	5,820	44	565	4	120	...	...	...	...	...	...
	6	35	...	...	9	...	52	1,417	17	340	...	...	...	...	...	...
	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	21,930	3,70,679	6,792	1,89,638	2,350	64,920	2,293	57,533	2,311	57,438	263	5,774	516	9,330	322	15,800
Total	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,93,689

XXX

	(10) EKRUT TANK.		(11) KRISHNA CANAL.		(12) KHA'RI CUT.		(13) HASTALA TANK.		(14) MASVA TANK.		(15) JA'MDA CANALS.		(16) PARBUL TANK.		(17) PRAYAGA RIVER WORKS—OHAR CANAL.		(18) BHATOLI TANK.	
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.
Gardens and Orchards.	Acres. 35 Rs. 640	480	Acres. 51 Rs. 400	400	Acres. 14 Rs. 21	...	Acres. 1 Rs. 85	...	Acres. 3 Rs. 680	...	Acres. 68 Rs. 4,542	...	Acres. 1 Rs. 241	...	Acres. 86 Rs. 1,720	98 2,400	...	...
Sugarcane	229	57,200	1,023	40,913	7	2,100	...	...	...	...	85	18,621	...	...	98	14,700	38	7,600
Cereals	288 Wheat Barley Rice Maize Jowar Chino, Ragi, Bala, Wara Bajri Miscellaneous	7,955 1,400 17,175 5,100 5,720 8,800 45	106 148 18 168 5 2 40	890 740 88 900 15 3 480	2 1,225 38,765 ...	55 1 ...	770 60 ...	9,680 120 ...	176 2 ...	...	931 103 352 19 ...	9,310 677 2,160 76 ...	58 4 8 181 ...	2,744 157 152 3,538 ...	944 22 699 1,440 ...	28,320 560 20,370 36,000 ...	108 ...	7,920
Pulses	307 Tur Peas Gram Mung Mustard Sesamum Miscellaneous	4,605 60 17,760 24	3 ...	50 30,300 120	...	1 ...	38 ...	12 ...	12 ...	...	246 13 2 ...	1,310 83 12 ...	...	...	669 11 ...	20,070 440 ...	234 210 ...	5,616 9,450 ...
Fodder Crops	39 Fodder Lucerne, &c.	780 ...	62 ...	275 ...	...	...	...	...	...	...	9 ...	36 ...	...	...	342 ...	13,680 70 ...	1 ...	40
Fibres	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dyes	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drugs and Narcotics	2 Mustard Sesamum Blang ...	50 100 ...	4 ...	112 ...	...	...	...	...	...	...	2 ...	15 ...	...	...	9 ...	480 270 ...	7 30 ...	364 3,060 ...
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments	83 Chilly and Onions Garlic, Turnip and Mendi ...	2,635 24 675	88 5 9	390 90 ...	...	...	...	...	...	...	78 45 ...	2,540 560 ...	6 34 ...	1,425 265 ...	48 100 ...	1,920 100 ...	9 1 ...	308 20 ...
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Land insufficiently irrigated	19 ...	...	...	...	1,035 5,175	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	2,534	1,16,269	3,782	84,602	2,271	44,081	66	1,034	205	11,071	2,023	40,518	314	8,960	4,561	1,45,800	1,307	48,955

	(19) MATOBA TANK.		(20) KASINDI TANK.		(21) SHRESHPAL TANK.		(22) BHADALVA DI TANK.		(23) KORAGAN TANK.		(24) ARBIT TANK.		(25) REVARI CANAL.		(26) UPPER MAIN RIVER WORKS.		(27) YERLA RIVER IRRIGATION WORKS.	
	Area irrigated.	Estimated Value.	Acres.	Ra.	Area irrigated.	Estimated Value.	Acres.	Ra.	Area irrigated.	Estimated Value.	Acres.	Ra.	Area irrigated.	Estimated Value.	Acres.	Ra.	Area irrigated.	Estimated Value.
Gardens and Or- chards.	23	530	8	196	2	10	2	53	4	160	7	280	19	71	12	88	12	88
	7	358	28	2,082	15	741	1	100	1	100	32	3,200	6	60	5	90	40	900
Sugarcane	302	1,03,013	64	18,735	216	1,04,029	10	4,800	73	21,900	73	21,900	69	1,725	89	2,200	124	2,600
	317	15,287	325	17,080	124	4,922	30	600	238	4,760	238	4,760	172	853	258	1,464	221	940
	90	1,345	1	22	4	106	4	80	101	3,820	101	3,820	17	68	24	65	6	12
Cereals	521	18,374	132	4,612	228	8,092	273	6,992	146	2,900	208	1,584	99	4,656	99	392	46	134
	9	81	3	168	12	166	4	87	11	110	11	110	4	8	20	38	408	4,602
{ Chino, Regi, Rala, Wara	540	13,501	38	955	439	11,479	99	694	30	60	32	60	6	12	11	22	54	8
{ Miscellaneous	2	61	9	216	216	...	...	...	36	1,440	36	1,440	62	620	45	450	57	570
{ Gram, Urid, Mug	298	7,922	26	575	108	2,390	89	970	5	50	172	1,720	13	52	87	348	238	944
{ Tur	20	313	1	9	6	132	1	132	...	...	14	140	...	...	10	...	10	65
Pulses	1	40	1	20	2	65	1	36	124	3,720	300	9,000	468	9,160	163	2,430	698	10,320
	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	40
Fodder Crops	7	210	...	...	...	...	5	201	...	...	...	...	...	...	...	7	70	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fibres	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
{ Cotton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Tag (Hemp)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dyes	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	3	548	...	...	...	...	...	...	...	...	...	...
Drugs and Nar- cotics.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Mustard, Sesam	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Linseed, Castor-oil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments	34	1,025	4	120	24	697	22	2,524	7	280	53	2,120	5	72	30	300	38	458
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	70
{ Chilly and Onions	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Garlic, Turmeric and Methi.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	8	...	16	...	12	...	...	...	...	...	...	...	...	...	...	...	...	...
Land unsuitably irrigated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	2,177	1,61,576	245	8,324	1,802	62,425	985	1,22,545	336	12,600	1,447	54,544	1,225	17,381	1,431	11,156	1,924	21,993

	(28) CHIERALI CANAL.		(29) MARI TANK.		(30) MUCKKONDI TANK.		(32) GADIKERI TANK.		(33) DAMMAL TANK.		(34) MEDURU TANK.		(35) MADAG TANK.		(36) ASUNDI TANK.		(37) MANNAR KOP TANK.		(38) GOKAK CANAL, 1ST SECTION.		TOTAL.	
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.		
Gardens and { Vegetables ...	3	10	30	72	...	...	...	...	53	5	700	1	15	855	20	300	...	...	164	2,460	24,508	...
Orchards. { Fruit and other trees ...	1	24	82	1,975	2	...	...	5	5	1,300	13	1,300	3	300	...	...	...	17	1,700	1,075	1,34,638	...
Sugarcane ...	10	400	112	2,900	...	...	...	57	11,400	60	13,200	41	8,200	9	1,800	...	...	49	9,800	7,175	21,95,413	...
Cereals	37	184	162	674	...	...	...	...	...	...	...	...	...	...	...	...	...	8	96	12,254	2,96,348	...
	1	...	7	14	...	...	...	...	...	...	...	...	...	...	...	...	...	105	1,260	604	13,556	...
	...	...	13	36	...	...	...	...	...	...	...	...	...	...	...	...	...	83	1,494	4,333	1,08,074	...
	...	...	4	60	...	...	...	...	...	...	...	...	...	...	...	...	...	983	11,786	2,237	22,338	...
	57	252	184	1,414	...	...	...	...	...	...	...	...	...	...	...	...	...	1,893	20,895	17,590	3,74,332	...
	8	25	36	72	...	...	...	...	...	...	...	...	...	...	...	...	...	400	4,000	864	7,374	...
Pulses...	4	17	207	414	...	...	...	...	...	...	...	...	...	...	...	...	...	39	390	13,325	1,56,458	...
	2	21	36	360	...	...	...	...	...	...	...	...	...	...	...	...	...	706	...	706	12,089	...
Fodder Crops...	12	70	174	695	...	...	...	...	4	48	...	...	...	...	...	...	...	177	2,124	6,333	1,08,818	...
	...	...	7	30	...	...	...	...	...	...	...	...	...	...	...	...	...	29	345	318	1,215	...
	233	4,650	590	8,335	...	...	...	...	...	...	...	...	...	...	...	...	...	32	640	9,480	2,57,845	...
Fibres...	3	25	57	228	...	...	...	...	...	...	...	...	...	...	...	...	...	7	70	210	4,442	...
Dyes ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,773	55,454	...
Drugs and Nar- { Tobacco ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	94	14,407	...	...
... { Bhdag...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments ...	31	315	31	372	...	...	...	...	30	600	1	20	13	920	15	300	...	...	344	...	67,381	...
Miscellaneous	10	196	26	180	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14	...	...	...
Land husbandry irrigated	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	413	6,194	1,775	18,346	2	...	...	...	152	13,683	104	14,927	651	19,603	75	2,970	...	...	4,178	70,087	85,550	38,90,146
Area on which consolidated assessment is levied	...	...	...	...	...	...	...	...	97	...	...	...	...	...	124	...	491	...	...	...	1,040	...

IV—E.

Comparative Statement of Irrigation and Rainfall for the years 1888-89 and 1889-90 in the Deccan and Gujarat.

No.	Works supplying irrigation.	Civil Station.	Total Area in Acres.	Culti- vated Area in Acres.	AREA IRRIGATED IN ACRES.						RAINFALL.		Remarks.
					1888-89.			1889-90.			1888-89.	1889-90.	
					Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
MAJOR WORKS.					Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Inches.	Inches.	
Protective Works.													
1	Nira Canal	Poona	307,569	134,935	4,209	14,350	18,559	9,819	12,111	21,930	*15.09	*24.57	Average for 5 stations for 1888-89 and for 1889-90. Haturia in addition.
2	Mhasvad Tank	Satara, Sholapur and Pratinidhi State.	129,045	106,214	2,965	3,189	6,104	4,074	2,718	6,792	18.27	27.38	
	Total		436,604	241,149	7,174	17,439	24,663	13,893	14,829	28,722			
Productive Works.													
5	Hathmati Canal	Ahmedabad	44,744	8,000	1,010	1,457	2,467	909	1,441	2,350	15.17	23.06	
6	Lower Panjhra River Works	Khandesh	13,117	12,627	1,814	850	2,604	1,585	703	2,293	13.10	13.38	
7	Kidra River Works— Palkhed Canal Ojhar Tsubat Canal Waddi Canal.	Nasik											
		Do.	28,832	9,837	662	1,233	1,895	1,331	980	2,311	28.74	18.06	
		Do.	8,055	2,367	158	180	344	216	47	263	23.12		15.39
		Do.	3,486	2,438	38	220	258	256	290	516			
8	Pravara River Works—Lakh Canal.	Ahmednagar	29,913	11,280	321	493	814	255	67	322	12.69	26.17	
9	Mutha Canals	Poona	94,057	49,600	7,219	2,545	9,764	7,633	5,685	13,328	31.47	30.00	
10	Ekrak Tank	Sholapur	17,182	15,320	1,620	1,356	2,976	1,335	1,199	2,534	22.79	31.66	
11	Krishna Canal	Satara	27,407	25,533	1,919	1,456	3,375	1,667	2,065	3,732	13.08	32.60	
	Total		268,793	137,197	14,701	9,796	24,557	15,207	12,452	27,659			
	Total, Major Works		705,397	378,346	21,935	27,285	49,220	29,100	27,281	56,381			
MINOR WORKS AND NAVIGATION.													
12	Khari Cut	Ahmedabad	17,300	11,500	13		13	2,267	4	2,271	18.58	23.59	
13	Hartala Tank	Khandesh	529	415	47	141	188	6	60	66	19.48	27.07	
14	Mhasva do.	Do.	4,647	2,983	110	468	576	16	180	205	17.24	24.46	
15	Jamda Canals	Do.	46,286	30,588	2,220	2,954	5,174	743	1,280	2,023	16.02	18.84	
16	Parsul Tank	Nasik	12,593	97				190	124	314	10.04	12.99	† Approximate figures as per para. 1 of the Parsul Tank Report.
17	Pravara River Works—Ojhar Canal.	Ahmednagar	23,724	14,763	1,295	2,629	3,924	2,245	2,315	4,561	16.07	18.70	
18	Bhatedi Tank	Do.	15,126	12,124	807	913	1,720	82	1,225	1,307	24.05	19.17	
19	Mitoba do.	Poona	10,700	7,133	962	903	1,865	1,094	1,083	2,177	23.32	19.46	
20	Kasurdi do.	Do.	597	478		144	144	53	192	245	13.08	23.30	
21	Shirsuphal Tank	Do.	4,500	2,500	592	1,161	1,753	643	659	1,302	14.37	25.91	
22	Bhadalvadi do.	Do.	3,000	2,400	419	201	710	625	490	985	20.57	25.69	
23	Koregaon do.	Sholapur	Not known.		151	59	239	13	323	336	25.50	36.33	
24	Ashti do.	Do.	17,922	14,476	980	1,495	2,417	829	618	1,447	19.38	29.67	
25	Revāri Canal	Satara	3,813	3,621	235	775	1,000	192	1,083	1,225	28.50	34.92	
26	Upper Man River Works	Do.	6,786	5,966	746	634	1,380	743	688	1,431	20.07	30.13	
27	Yerla River Irrigation Works	Do.	11,234	10,650	691	972	1,663	774	1,150	1,924	27.32	36.01	
28	Chikhli Canal	Do.	1,871	1,478	331	77	408	312	101	413	21.46	32.19	
29	Maini Tank	Do.	4,876	4,025	1,305	581	1,887	1,326	449	1,775	17.81	35.06	
30	Muchkundi Tank	Bijapur	5,670	3,417	2		2	2		2	19.26	20.69	
31	Nilgund do.	Do.											
32	Gadikeri do.	Belgaum	687	Not known.							32.36	35.56	‡ Areas on which consolidated assessment is levied.
33	Dambal do.	Dhārwar	4,555	4,525	130	88	218	83	69	137	11.15	19.28	
34	Medlori do.	Do.	1,316	1,052	111	4	115	95	9	104	16.85	25.12	
35	Madag do.	Do.	2,555	1,700	354	234	638	390	261	651	27.31	29.18	
36	Asundi do.	Do.	1,800	1,300	86	27	113	49	26	75	16.85	25.12	
37	Mavinkop do.	Do.	687	Not known.									
	Total		193,031	138,304	11,378	14,560	28,138	12,673	12,318	24,991			
PROVINCIAL													
38	Gokak Canal, 1st Section	Belgaum	18,668	16,663	2,238	1,409	3,357	2,993	1,185	4,178	16.71	22.72	
	GRAND TOTAL		915,096	533,313	35,851	43,344	79,195	44,766	40,784	85,550	19.68	29.75	Average of 35 stations.

Notes.—The figures in column 4 are those of gross area under command, and those in column 5 of the net irrigable area at present.

STATEMENT F.

Statement showing the Operations of Irrigation Works in the Deccan and Gujardt
for the year 1889-90.

No.	Names of Works.	AMOUNT DUE, 1889-90.		REMISSIONS.		TOTAL*		Grand Total.	Remarks.
		Kharif, 1889-90†	Rabi, 1889-90.	Kharif.	Rabi.	Kharif.	Rabi.		
1	2	3	4	5	6	7	8	9	10
	MAJOR WORKS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
	Protective Works.								
1	Nira Canal	9,130	18,848	*654	2,636	8,475	16,212	24,687	* Includes Rs. 5 remission. The rest is free grant.
2	Mhasvad Tank	10,458	5,097	293	293	10,165	4,804	14,969	
	Total	19,588	23,945	948	2,929	18,640	21,016	39,656	
	Productive Works.								
5	Háthmati Canal	2,809	2,854	...	12	2,809	2,842	5,651	
6	Lower Pánjhra River Works	2,478	2,850	...	...	2,478	2,850	5,328	
7	Kadva River Works. {	Wághad Tank	...	...	...	...	...	...	
		Pákhed Canal	6,103	2,230	...	6,103	2,230	8,333	
		Ojhar T & in bat Canal	719	102	...	719	102	821	
		Waddáli Canal	755	549	...	755	549	1,304	
8	Pravara River Works—								
	Lákh Canal	1,115	144	...	...	1,115	144	1,259	
9	Mutha Canals	1,07,121	14,123	5	...	1,07,116	14,123	1,21,239	
10	Ekrák Tank	5,434	4,007	...	...	5,434	4,007	9,441	
11	Krishna Canal	22,241	7,365	...	...	22,241	7,365	29,606	
	Total	1,48,775	34,224	5	12	1,48,770	34,212	1,82,982	
	Total Major Works ...	1,68,363	58,169	953	2,941	1,67,410	55,228	2,22,638	
	MINOR WORKS AND NAVIGATION.								
12	Khári Cut... ..	13,361	9	7,900	...	5,461	9	5,470	
13	Hartála Tank	26	124	...	...	26	124	150	
14	Mhasva do.	71	381	...	...	71	381	452	
15	Jámda Canals	2,231	2,742	...	...	2,231	2,742	4,973	
16	Parsul Tank	...	...	...	...	...	...	...	Rates not yet fixed.
17	Pravara River Works—								
	Ojhar Canal	4,217	4,719	...	...	4,217	4,719	8,936	
18	Bhátodi Tank	846	2,952	...	...	846	2,952	3,798	
19	Mátoba do.	6,636	2,509	...	...	6,636	2,509	9,145	
20	Kásurdi do.	61	449	...	...	61	449	510	
21	Shirsuphal Tank... ..	1,428	1,761	...	...	1,428	1,761	3,189	
22	Bhádálvadi do.	2,704	1,122	...	...	2,704	1,122	3,826	
23	Koregaon do.	55	688	...	...	55	688	743	
24	Ashti do.	3,063	1,460	...	...	3,063	1,460	4,523	
25	Revári Canal	1,391	3,297	...	31	1,391	3,266	4,657	
26	Upper Mán River Works	3,945	2,470	...	...	3,945	2,470	6,415	
27	Yerla River Irrigation Works	4,716	3,511	...	...	4,716	3,511	8,227	
28	Chikhli Canal	1,198	334	...	...	1,198	334	1,532	
29	Maini Tank	5,904	1,614	...	...	5,904	1,614	7,518	
30	Muchkundi Tank... ..	19	...	...	...	19	...	19	
31	Nilgund do.	...	...	...	...	...	...	...	
32	Gádikeri do.	...	...	...	...	...	...	...	
33	Dámbal do.	529	337	260	...	269	337	606	
34	Medleri do.	426	31	...	...	426	31	457	
35	Madag do.	1,126	753	...	...	1,126	753	1,879	
36	Asundi do.	167	64	...	...	167	64	231	
37	Mávinkop do.	...	...	...	...	...	...	...	
	Total	54,120	31,327	8,160	31	45,960	31,296	77,256	
	PROVINCIAL								
39	Gokák Canal, 1st Section	4,782	2,490	...	...	4,782	2,490	7,272	
	GRAND TOTAL	2,27,265	91,986	9,113	2,972	2,18,152	89,014	† 3,07,166	

* Note.—The difference of Rs. 5,370 between this and the grand total of direct water-rates (vide column 8 of Statement II—E) is on account of enhanced water-rates on old works of the Lower Pánjhra River Works.

I—F.

Statement showing Water-rates per Acre in force during 1889-90 on Irrigation Works in the Bombay Presidency, excluding Sind.

No.	Names of Works.	WATER-RATES.					Occupiers' Rate.	Owners' Rate.	Water Advantage.	Remarks.
		Class I.	Class II.	Class III.	Class IV.	Class V.				
		Perennial.	Eight months.	Four months.	Monsoon Dry.	Special Hot Weather.				
1	2	3	4	5	6	7	8	9	10	11
	MAJOR WORKS.		Rs.	Rs. a. p.	Rs. a. p.					
	Protective Works.									
1	Nira Canal...	8	3	1 4 0	0 4 0	4				
2	Mhasvad Tank ...	8	{ 3 0 0 a 0 12 0	{ 1 4 0 a 0 12 0	{ 0 4 0 0 4 0	4				a Māf land 8 months and rabi crops.
	Productive Works.									
5	Hāthmati Canal ...	10	b3	2 0 0	1 0 0	6				
6	Lower Pānjhā River Works ...	10	4	2 0 0	1 0 0	4				b Rice flooding land is charged at Re. 1.
7	Kādva River (Pātkhed Canal... Ojhar Tanbat Works.	8 8	4 4	2 0 0 2 0 0	1 0 0 1 0 0	6 6				
8	Prāvāra River Works (Lakh Canal) ...	8	4	2 0 0	1 0 0	6				
9	Mūlthā Canals.	First Section, i.e., within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits. Second Section, i.e., for all villages excepting those within the above-mentioned limits within a radius of 8 miles from Poona. Third Section, i.e., for villages beyond those limits. For pān gardens wherever situated throughout the canal ...	A. 50	{ 2 0 0 2 8 0 2 0 0 2 0 0 1 8 0	{ 0 8 0 1 4 0 1 4 0 1 0 0 1 0 0	4 6 6 6 6	As detailed under water-rates.	Nil.	Nil.	Rates not yet sanctioned.
			B. 9							
			C. 6							
			A. 25							
			B. 18							
			C. 12							
			A. 18							
			B. 12							
			C. 10							
			30							
			10							
			11							
	Minor Works and Navigation.									
12	Khāri Cut ...	14	b7	5 0 0	1 0 0	4				
13	Hartāla Tank ...	10	4	2 0 0	1 0 0	4				
14	Mhasva Tank ...	10	4	2 0 0	1 0 0	4				
15	Jāmda Canals ...	16	4	2 0 0	0 8 0	4				
16	Pārsul Tank ...	.....	.....	.....	.....	.....				
17	Prāvāra River Works (Ojhar Canal) ...	8	4	2 0 0	0 8 0	4				
18	Bhātodi Tank ...	12	4	2 0 0	1 0 0	4				
19	Mātoba Tank ...	A. 18 B. 12 C. 10	4	2 0 0	1 0 0	6				
		Pān per dens. 20	.....	.....	.....	.....				
		A. 16 B. 12 C. 10	4	2 0 0	0 12 0	6				
20	Kāsnrdi Tank ...	10	4	2 0 0	0 12 0	6				
21	Shirsuphal Tank ...	10	4	2 0 0	0 12 0	4				
22	Bhādālvādi Tank ...	10	4	2 0 0	0 12 0	4				
23	Koregaon Tank ...	6	2	2 0 0	2 0 0	2				
24	Ashti Tank ...	12	4	2 0 0	0 12 0	4				
25	Revāri Canal ...	18	4	2 0 0	1 0 0	6				
26	Upper Mān River Works ...	18	4	2 0 0	0 12 0	6				
27	Varla River Irrigation Works ...	18	4	2 0 0	1 0 0	6				
28	Chikhi Canal ...	18	4	2 0 0	1 0 0	6				
29	Maini Tank ...	18	4	2 0 0	0 12 0	6				
30	Muchkundi Tank ...	18	c4	c2 0 0	c1 0 0	14				
31	Nilgund Tank ...	.....	.....	.....	.....	.....				
32	Gadikeri Tank ...	.....	.....	.....	.....	.....				
33	Dāmbal Tank ...	10	{ d4 e6	{ f2 0 0 g2 0 0	{ 0 8 0 0 8 0	...				
34	Medleri Tank ...	8	{ 3 d4	{ 1 4 0 f2 0 0	{ 0 4 0 0 8 0	4				
35	Madag Tank ...	10	{ e6 3	{ h4 0 0 1 4 0	{ 0 8 0 0 4 0	...				
36	Asundi Tank ...	8	{ e6 3	{ h4 0 0 1 4 0	{ 0 8 0 0 4 0	4				
37	Māvinkop Tank ...	.....	.....	.....	.....	.....				
38	Provincial.	.....	d3 0 0	j1 8 0	.....	.....				
39	Gokāk Canal, 1st Section ...	17	{ e6 0 0 f7	{ e2 0 0 h5 0 0	{ j0 12 0 j0 12 0	...				c These are the rates sanctioned, but only perennial crops were irrigated. d From 15th June to 15th Febr'y. e " 15th Oct. to 15th June. f " 15th June to 15th Oct. g " 15th October to 15th Febr'y. N.B.—For Madag and Dāmbal tanks a water-rate of annas 8 was charged for single watering for any kind of crops or for tilling ground. h From 15th Febr'y. to 15th June. i This is a special rate for sweet potatoes which requires water for about 10 months. j This is charged for single watering for tilling ground.

Note.—(1) For 1st Irrigation half the ordinary rates are charged.

(2) Double the ordinary rates are charged as penal rates for taking water without permission.

c These are the rates sanctioned, but only perennial crops were irrigated.

d From 15th June to 15th Febr.

e " 15th Oct. to 15th June.

f " 15th June to 15th Oct.

g " 15th October to 15th Febr.

N.B.—For Madag and Dāmbal tanks a water-rate of annas 8 was charged for single watering for any kind of crops or for tilling ground.

h From 15th Febr. to 15th June.

i This is a special rate for sweet potatoes which requires water for about 10 months.

j This is charged for single watering for tilling ground.

STATEMENT G.

Statement showing Areas and Water-rate Assessments during 1889-90 according to the system of classification adopted in fixing the scale of water-rates.

No.	Name of Works.	CLASS I. PERENNIAL.		CLASS II. 8 MONTHS.		CLASS III. 4 MONTHS.		CLASS IV. MONSOON DRY.		CLASS V. SPECIAL HOT WEATHER.		MISCELLANEOUS.		GRAND TOTAL.		Remarks.	
		Areas.	Assessment.	Areas.	Assessment.	Areas.	Assessment.	Areas.	Assessment.	Areas.	Assessment.	Areas.	Assessment.	Areas.	Assessment.		
MAJOR WORKS.																	
Protective Works.																	
1	Nira Canal	184	1,471 101	3,349	10,078 690	10,419	13,142 2,202	7,372	1,847 243	606	1,440 54	...	...	21,980	27,078 13,280	*Includes 2,077 acres for which water was given free. 1 Do. 252 do. 1 Free grants.	
2	Mhasvad Tank	249	1,370 72	2,981	9,388 185	2,600	10,940 328	300	1,604 111	562	1,386	...	...	46,792	24,688 15,553 1,586		
	Total	533	4,128	6,330	19,377	13,019	13,652	7,672	1,714	1,168	3,836	...	...	28,722	39,657		
	Average rate	...	7.74	...	2.37	...	1.04	...	.22	...	3.32	...	...	...	1.38		
Productive Works.																	
5	Hathmati Canal	5	50	878	2,633	1,416	2,732	...	...	41	226	10	10	2,350	5,651	Remissions excluded. N. B.—The area of mamul bigayad on the Lower Pānjāra River Works was 1,709 acres assessed at Rs. 5,370.	
6	Lower Pānjāra River Works	196	2,023	221	1,565	134	1,509	13	55	19	76	1	9	584	5,327		
7	Kādva River Works.	260	2,300	615	2,550	968	2,611	288	328	180	1,135	...	...	2,311	8,333		
	Palked Canal	25	200	55	220	73	140	78	78	32	178	...	...	263	822		
	Ojhar Canal	9	75	78	314	297	594	97	110	35	211	...	...	510	1,804		
	Wādali Canal	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
8	Pravara River Works—Lākh Canal.	A 1,237	47,546	...	...	...	...	...	...	...	...	...	...	...	...		
	First Section, i.e. within the Poona City and Suburban Municipality and Cantonment limits, or within one mile of these limits.	B 255	2,046	...	...	...	...	...	...	...	...	...	...	...	...		
	Second Section, i.e. for all villages excepting those within the above-mentioned limits within a radius of 8 miles from Poona.	C 149	1,003	350	1,774	456	1,201	38	59	...	...	...	...	...	...		
	Third Section, i.e. for villages beyond those limits.	A 1,516	41,657	...	...	...	...	...	...	...	...	...	...	...	...		
	For pān gardens wherever situated throughout the canal.	B 61	895	...	...	...	...	...	...	...	...	...	...	...	...		
		C 70	751	...	...	...	...	...	...	...	...	...	...	...	...		
		A 469	5,864	1,077	4,396	4,875	8,659	2,784	2,759	...	...	...	...	...	...		
		B 21	176	...	...	...	...	...	...	...	...	...	...	...	...		
		C 21	176	...	...	...	...	...	...	...	...	...	...	...	...		
10	Ekrāk Tank	...	42	1,240	...	...	...	...	...	...	...	...	...	...	...		
11	Krishna Canal	...	355	3,776	715	2,841	922	2,143	454	361	58	310	...	18	2,534	6,440	
		...	1,032	20,040	2,357	9,092	247	494	17	28	70	456	...	...	31,523		
	Total	6,211	1,31,428	6,361	26,125	8,958	19,823	3,627	3,838	524	2,961	69	508	25,950	1,94,708		
	Average rate	...	21.16	...	4.10	...	2.21	...	1.00	...	5.65	...	7.72	...	7.11		
MINOR WORKS AND NAVIGATION.																	
12	Khāri Cut	...	7	49	2,369	5,412	4	...	...	...	...	...	...	...	2,271	5,470	Remissions excluded.
13	Hārjala Tank	...	1	7	...	...	...	...	...	...	...	...	...	...	66	150	
14	Mhasva Tank	...	3	30	...	...	...	...	...	...	...	...	...	...	205	492	
15	Jāmā Canals	...	124	1,618	111	443	1,253	2,660	620	203	15	84	...	...	2,024	4,978	Water-rates not yet fixed.
16	Parasol Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	Pravara River Works—Ojhar Canal	...	165	1,315	61	2,590	2,432	4,917	1,499	750	408	1,645	...	...	4,561	8,307	
18	Dhātodi Tank	...	43	770	250	1,025	863	1,960	7	7	16	...	...	...	1,807	3,793	
19	Mātoba Tank	...	A 301	5,150	...	...	...	...	...	...	...	...	...	...	...	...	
		B 1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	
		C 6	24	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Pān gardens.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	Kāsurdi Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	Shirsuphal Tank	...	A 64	599	...	...	...	...	...	...	...	...	...	...	...	...	
		B 21	157	...	...	...	...	...	...	...	...	...	...	...	...	...	
		C 7	54	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	Bhādaivādi Tank	...	A 210	1,888	...	...	...	...	...	...	...	...	...	...	...	...	
		B 6	46	...	...	...	...	...	...	...	...	...	...	...	...	...	
		C 16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
23	Koregaon Tank	...	18	107	129	259	185	370	4	...	...	...	...	...	330	743	
24	Ashli Tank	...	102	1,282	361	1,439	634	1,436	312	223	38	155	...	...	1,447	4,294	
25	Revāri Canal	...	74	886	497	2,010	460	1,135	13	12	...	...	...	...	1,205	4,988	
26	Upper Mān River Works	...	32	1,074	690	2,799	369	738	21	23	295	1,002	...	...	1,431	7,117	
27	Yerla River Irrigation Works	...	165	2,033	925	3,721	698	1,809	40	48	196	1,059	...	...	1,924	8,227	
28	Chūkhī Canal	...	11	106	390	1,186	84	178	10	12	6	59	...	...	413	1,533	
29	Mān Tank	...	194	3,492	857	3,772	255	610	381	450	52	622	...	...	1,774	8,662	
30	Machkundī Tank	...	2	19	...	...	...	...	...	...	...	...	...	...	2	19	
31	Nīlgaund Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	Gādhikān Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	Dāmāl Tank	...	43	432	39	232	36	72	2	3	32	127	...	...	132	866	
34	Māderi Tank	...	28	228	1	4	17	22	6	2	51	203	...	...	103	457	
35	Madag Tank	...	44	414	63	372	...	528	1,666	...	...	...	...	...	611	1,890	
36	Asundi Tank	...	9	73	18	95	30	55	6	1	3	2	1	75	...	231	
37	Māvinkop Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Total	1,779	22,563	7,134	25,415	10,671	20,008	4,788	5,362	1,150	6,531	70	109	24,949	79,698		
	Average rate	...	12.69	...	3.56	...	2.07	...	.92	...	5.67	...	...	...	3.18		
Provincial.																	
39	Gokāk Canal, 1st Section	67	670	548	1,644	1,130	2,260	2,203	2,113	50	250	189	335	4,178	7,373		
	Grand Total	8,500	1,58,419	20,373	69,461	33,178	56,643	18,487	11,617	2,582	18,628	310	1,607	53,899	3,11,235		
	Average rate	...	18.48	...	3.40	...	1.70	...	.62	...	4.71	...	3.34	...	3.71		

Note.—The difference between the figures of total areas and assessments in this statement and those in Statements I-E to IV-E is due to difference in treatment of fractions in some cases, and if others to the fact that the figures in this statement are more or less hypothetical, and are arrived at on the assumption that certain areas are assessed at certain rates.

MAJOR WORKS.

PROTECTIVE IRRIGATION WORKS.

(1).—NIRA CANAL.

1. The total length of Nira Canal completed and in operation at the end of 1888-89 was 95 miles. During the year under review, all the masonry works were finished, and the earth-work, with the exception of some embankment and cutting in the 100th mile, was completed. The whole of the main canal may now be said to be practically complete up to the 101st mile. In the original project, the length of the canal was proposed to be 103 miles. The last distributary (viz., No. 61, not yet constructed) will leave the main canal in the 101st mile, and will form the tail of the canal. The command beyond this point is very restricted, and any extension would be both difficult and expensive, owing to the broken and rocky nature of the ground. The canal ends close to the foot of the line of hills which run due east and west, and form the water-shed between the Nira and the Bhima-Mutha valleys. The total final length, therefore, of the Nira Canal is 100 miles and 1,219 feet. The irrigable area commanded in the previous year was 116,414 acres. During the year, distributary No. 57 was nearly completed, and was opened for irrigation during the rabi season, bringing a further area of 18,521 acres under command, making the total for the canal 134,935 acres.

2. In Statement No. IA, the figures in columns 7 and 8 have now been altered to correspond with those obtained by actual survey, and represent the total eventual irrigable area to be commanded by the complete project.

3. The total area irrigated during the year was 21,930 acres. This compares with previous years since the opening of the canal as follows :—

Year.					Kharif.	Rabi.	Total.	Water-rate Assessment.
					Acres.	Acres.	Acres.	Rs.
1885-86	...	...	...	...	2,796	8,399	11,195	Water given free.
1886-87	...	...	...	...	1,708	2,754	4,462	6,050
1887-88	...	...	...	...	2,765	2,763	5,528	7,829
1888-89	...	...	...	...	4,209	14,350	18,559	20,671
1889-90	...	...	...	...	9,819	12,111	21,930	24,688

4. The area irrigated during the year was 3,371 acres more than in the previous year. The increase was in the kharif, there being a decrease of 2,239 acres in the rabi area. The increase in the former was due to very scanty kharif rainfall. At the beginning of the rabi season very good rain fell, and was sufficient for sowing purposes. At the latter end of the season there was no rain, and the result was a comparatively heavy demand for water for jowari in December and January. But in many parts of the district the heavy rain that fell in October was sufficient to bring the jowari to maturity, with however a smaller out-turn than if the crops had been irrigated. The area of jowari and bajri will always vary with the character of the rainfall; omitting these, it will be seen that the total area irrigated during the year was 8,057 acres, or 2,856 acres more than the corresponding figures for the previous year. The increase of 258 acres in wheat, 847 acres in gram, and 936 acres in ground-nut compared with the previous year is very satisfactory.

only one interruption, when the canal was closed for seven days for silt clearance. The following table shows the average monthly discharge of the canal at the head :—

					Cubic feet per second.
April 1889	...	...	...	...	48
May "	...	...	...	...	53
June "	...	...	...	...	149
July "	...	...	...	...	143
August "	...	...	...	...	156
September "	...	...	...	...	212
October "	...	...	...	...	149
November "	...	...	...	...	155
December "	...	...	...	...	150
January 1890	...	...	...	...	135
February "	...	...	...	...	122
March "	...	...	...	...	65

8. The working expenses, including indirect charges, amounted to Rs. 27,107. This is at the rate of Rs. 300 per mile of main canal in operation (90 miles) and Rs. 1.24 per acre irrigated.

9. The gross revenue from all sources amounted to Rs. 26,680. The assessed water-rates amounted to Rs. 24,688 for an area of 21,930 acres, of which 2,978 acres received water free. If the full area had been charged for, the total assessment of water-rates would have been Rs. 27,978. The net revenue of the year was Rs. 26,680—Rs. 27,107 = —Rs. 427.

10. The expenditure on plantations in 1889-90 was Rs. 1,708 against Rs. 1,174 in 1888-89, and receipts on account of plantations and canal produce (e. g. sale of wood, grass, &c.) are Rs. 519 against Rs. 639 in 1888-89; the reduction is principally due to the tarvad trees being sold in part only in 1889-90.

11. The area irrigated, with the exception of a small area of sub-divided land, was obtained by actual measurement. The total cost of measurement of cost was Rs. 1,152, or at the rate of 10 pies per acre.

12. The general results are shown in Statement I.—E. The following table gives the results of observations on certain of the distributaries :—

No. of Distributary.	AREA IRRIGATED.				Quantity of water consumed.	Average discharge for 120 days.	Duty for a base of 4 months.
	Wheat (Khapla)	Jowári and Gram.	Kharif.	Total Acres.			
Distributary No. 15	52	208	42	302	12,571,904	1.21	249
Do. " 18	137	885	133	1,155	71,749,232	6.92	167
Do. " 29	140	93	21	254	26,416,283	2.55	99
Do. " 36	108	360	165	633	80,248,900	2.91	217
Do. " 37	10	54	...	64	3,541,776	0.34	183

It will be seen that the irrigation from these distributaries was, with the exception of No. 29, chiefly of dry crops jowári and gram, and explains the somewhat high duty obtained.

13. *Special Experiments with Wheat Crops.*—During the rabi season the quantity of water consumed by a crop of wheat irrigated from Distributary No. I.—C. in the 9th mile was carefully gauged by a board fixed on the edge of the field. The irrigator was the same as in the experiment reported upon last year—vide paragraph 14 of the report for 1888-89—and the field was also the same. The area irrigated was 1.75 acres, 6 waterings were given, and the

total quantity consumed was 181,054 cubic feet, giving a duty of 100·2 acres to the cubic foot to a base of 4 months.

It is difficult to account for the low duty compared with that of the last year on the same field and under the same conditions. It is probably due to the fact that some of the waterings this year had to be extended over two days instead of one, and same parts of the field thus were unavoidably irrigated twice. Arrangements will be made to correct this defect in next year's experiment.

14. The rates in force are given in detail in Statement I.—F. These have been increased, and the new scale is to be applied from the 1st of July 1890.

Water-rates.

Excluding the area irrigated free of charge, the total area irrigated during the year was 18,952 acres, and the water-rates assessed amount to Rs. 24,688—an average of Re. 1·3 per acre as compared with Re. 1·6 in previous year. The slight reduction is due to the increase in area of kharif crop paying 4 annas per acre, and the decrease in the area of the rabi dry crop paying Re. 1·4·0 per acre.

15. The progress of irrigation so far has been satisfactory. The increase in the area irrigated during the past two years, although due to a certain extent to the extension of the main canal and the opening of the new distributaries, has taken place chiefly in the area which has been commanded since the canal was opened. The irrigation from the extreme end of the canal was very limited. The reason for this slow development of irrigation is that the people are still very sceptical as to supply of water being sufficient and permanent. They prefer to wait for a year to see how the new canal works, and then to prepare their land for irrigation. The fact that water was given free for the first year has, in reality, done very little towards inducing the people to irrigate. The free grant of water is now stopped, as per Government Resolution, No. 110 A.I.—1300, dated 10th July 1890. It is the cost of cultivation and bringing water to the fields that are the chief considerations, the water-rate being comparatively a trifling charge. The people under the first 60 miles of the canal have now full confidence in the canal, and this will extend to the end in a year or two.

General Remarks.

16. One or two interesting facts relating to the development of different classes of irrigation may be noted here. The cultivators in the Nira valley since the opening of the canal have shown a curious cunning caution with regard to irrigation, and have looked upon the rich men who first began irrigation simply as bold speculators, whose crops they watched, however, with interest, and from whose experience they were willing to benefit. A forcible example of this will be seen from the figures for "ground-nut" irrigation during the past two years. During 1888-89 only 198 acres were irrigated. The out-turn was exceptionally good, and proved very profitable. The result was that during 1889-90 the area of this crop rose to 1,134 acres, the out-turn being again extremely satisfactory. From enquiries recently made, it was found that, in many villages, fully half of the crop grown this year, instead of being sold, has been kept for sowing next year, and, therefore, a considerable increase may again be expected.

(a) Very little progress has been made in the cultivation of sugarcane owing chiefly to the people waiting to see if the supply during the hot weather would be continuous. Last season the supply was abundant, and this crop will, no doubt, increase rapidly during the next few years; the area, however, will depend entirely on the supply of manure. In this crop also many cultivators are waiting to see the result of sugarcane grown last year. The prevalent idea is that jagri made from canal-grown cane will not keep during the rains; if it passes this test, a considerable increase may be expected next year.

(b) The cultivation of wheat is very popular. The area, however, in 1889-90 shows very little increase on that of the previous year, due chiefly to the fact that it is sown generally on land which has grown bajri (dry crop) during the previous kharif season, and this year the bajri being late, many thought the season too far advanced to sow wheat.

(c) The area of gram irrigated during the year was 1,630 compared with 783 acres in the previous year. This crop is generally grown with the rainfall, the same as jowari, and will, therefore, vary with the character of the rainfall. The area will very probably continue to increase, because in this district very little rain ever falls at the end of the rabi season, when one or two waterings to gram, before it flowers, increases the yield considerably.

(2).—MHASVAD TANK.

1. The rainfall gauged at Rájévádi was 29·89 against 21·48 inches in the previous year; the early rains brought a little water to the tank, but after they set in there was little replenishment owing to the rains being light. At the beginning of September the level of water in the tank was R. L. 1,928·35, or 12·65 feet above the sill of the canal, a supply sufficient for 9 months for the crops then being irrigated, viz., 4,074 acres; but the rains in that month brought an ample supply, and the waste weir began to flow on 16th. The highest flood passed down at this time was 3 feet over the unfinished weir, which is 3,000 feet long; during the heavy rains of October there was an extraordinary flood of 5 feet over this weir; on 17th (evening) it was 0·55 feet, which depth increased to 5 feet in the morning of the 18th. The maximum discharge over weir was 76,262 cubic feet per second, which is equivalent to 0·23 of an inch run off from the whole area, which is 509 square miles. Such a high flood is reported not to have passed down the river for the last fifty years; but every thing was found in good condition after the flood subsided, except that some concrete had been moved behind the waste weir.

2. The area irrigated during the year was as given below :—

	Kharif. Acres.	Rabi. Acres.	Total. Acres.
1889-90...	4,074	2,718	6,792
1888-89 ...	2,965	3,139	6,104

representing an increase of 688 acres over the previous year. The fall in rabi is partly due to the favourable rains in October and partly to the land under command of this tank being generally inferior, on which only kharif is grown; however, the people appreciate the value of the water introduced to that part of the district, and the irrigation still steadily increases.

3. The area for which water was granted free during the year was—

Kharif. Acres.	Rabi. Acres.	Total. Acres.
108	144	252

This privilege is only granted when a new canal is opened to the villages which have not once enjoyed it since the opening of the canal.

4. The difference between areas applied for and actually irrigated was much less during the year, as will be seen from the following figures :—

Over applications in 1888-89 ...	...	1,390
Do. 1889-90 ...	...	833

that is, 12 per cent. of the total area irrigated, and it is hoped this will be much reduced next year.

5. The cost of measurement of the irrigated area was Rs. 94½, or Re. 0·2·3 per acre irrigated, which is high, and cannot be reduced, as the canals and distributaries in operation are 90 miles in length. The measurements were checked by the subordinate in charge to the extent of 10 per cent.

6. The working expenses, including indirect charges, amounted to Rs. 12,285. The charges for collection were Rs. 919. The maintenance charges were

*Rs. 75 were paid for compensation, which are included in this sum.

Rs. 6,402*, representing a charge of Rs. 0·15·0 per acre irrigated and Rs. 72 per mile, which is a fair rate, and is due to the canals made either in rock or moorum with escapes for the flood water requiring less repairs than canals made in black soil, and to the high velocity at which water passes down the canals, which prevents the accumulation of silt.

7. The assessment during the year from all sources was Rs. 16,671, of which Rs. 14,969 was from water-rates only. This is exclusive of the amount

for the area for which water was, given free, viz. Rs. 586. Including this, the rate per acre irrigated comes to Rs. 2.29 and is low in comparison with other canals, for the reason that the irrigation in this part of the country consists chiefly of dry crop at low water-rates. Again the rates are based on land assessment and are fixed at annas 12 per acre for any kind of crop, except perennial, on land assessed at or below annas 4 per acre, and the land is generally inferior. These rates remain in force for another year, and when revised will give better results. The remaining amount was derived from land in the contour let for cultivation and plantation on the canals and the tank.

8. The expenditure on plantation during the year was Rs. 499; this was incurred mostly in making new plantation. The receipts amounted to Rs. 65 only. The plantations on the canal require great care till they take root; they do not thrive so well as they do in black soil, and it will be long before they will begin to yield appreciably. The trees above and below 5 feet were 8,100 and 14,679 respectively.

9. Experiments were made on the canal to see what quantity of water was required to bring to maturity certain crops, and the result is given below :—

Crop.		Area in gunthás.	Quantity required to mature.	Proportionate quantity required per acre.
Sweet potatoes	Plot I	28	60,285 cubic feet.	86,121 cubic feet.*
	Plot I	52	64,034 "	49,257 "
Ground-nut	" II	21½	47,435 "	88,251 "
	Plot I	33	47,355 "	57,400 "
Wheat (jod)	" II	24	34,468 "	57,447 "

The results obtained from the discharge at head do not give correct data, as the quantity let out is large for the irrigation under it; but this discharge is necessary to send water to the tails of the canal and distributaries together 90 miles distant.

10. The following gives the loss in evaporation, absorption, &c., during the year :—

	Cubic feet.
Quantity of water in tank during the year	3,524,337,833
<i>Deduct—</i>	
Quantity discharged through the canals or by leakage, &c.	1,411,551,360
Do. in tank on 31st March	
1890	1,503,278,266
	<u>2,914,829,626</u>
Quantity lost by evaporation, absorption, &c.	
=4.40' depth of water in tank	609,508,297

(5).—HÁTHEMATI CANAL.

The rainfall for the year under review was 29.20 inches against 15.17 inches the previous year, the average of the last five years being 23.91 inches.

2. But although the rainfall was nearly double that of the previous year, the area irrigated was less by 117 acres than that of the year before. This was due to the scanty rainfall of the previous year and the consequent loss sustained by the cultivators, who sowed other sorts of corn in preference to rice in the kharif season during the year under report.

3. The areas irrigated during the last year and the year under report were as follows :—

	Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	1,010	1,457	2,467
1889-90	909	1,441	2,350

4. The assessments were as under :—

	Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	3,200	2,018	5,218
1889-90	2,809	2,854	5,663

5. Though the area brought under irrigation during the rabi season is nearly equal to that of the previous year, the assessments were more by Rs. 846, which was owing to the revised water-rates enforced from April 1889, as per Government Resolution No. 47 A. I.—601 of 28th March 1889.

6. The remissions granted during the year amounted to only Rs. 12, including Rs. 8-8-0 remitted to the I'dar Darbār for a free grant of water.

7. The areas applied for and those irrigated were as follows :—

	Kharif. Acres.	Rabi. Acres.
Applied for	820	1,022
Irrigated	909	1,441

The difference is due to the fact that the cultivators are generally apt to apply for a less acreage than what they actually irrigate, and also to the circumstance that certain fields situate within 200 yards of the canal, which are benefited by percolation, are assessed and their areas included in the assessment return, but no formal applications are made for such lands, as in other cases.

8. The areas irrigated were measured by the ordinary establishment employed on the canal (charged to Revenue Establishment) at a cost of 9 pies per acre.

9. The average water-rate per acre irrigated during the year was Rs. 2.40 as compared with Rs. 2.00 of the previous year.

10. The working expenses as compared with those of the previous year were as follows :—

	Extensions and Improvements.	Maintenance and Repairs.	Establishment, including Indirect Charges.	Tools and Plant.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
1888-89	826	4,938	2,635	...	8,399
1889-90 ... ..	.....	4,265	2,161	29	6,455

The rate per acre irrigated is Rs. 2.74 for the year under review, against Rs. 3.40 the previous year.

11. The average amount expended on silt clearance has been Rs. 332 a year from the commencement, while the length of the canal and distributaries is 46 miles, which gives a rate of a little over Rs. 7 per mile.

12. No reliable data can be given regarding the duty of water.

The canal has been gauged for a series of years, and the result shows that at least 50 per cent. is lost by absorption and evaporation in the first 10 miles, in which distance there is practically no irrigation.

The average discharge as gauged at the head during the last kharif season was 68 cubic feet per second, while the irrigated area was 909 acres. This gives a duty of 13.37 acres per cubic foot. But as nearly 50 per cent. is lost from the canal in the first 10 miles, the duty will be for the kharif nearly 28 acres per cubic foot of discharge, against 37 of the previous year.

In the rabi season the average discharge at the head for the year under report was 48 cubic feet per second, and the area irrigated 1,441 acres; allowing the same percentage for loss by absorption, the return would be about 60 acres per cubic foot, against 67 of the year before.

(6).—LOWER PÁNJHRA RIVER WORKS.

1. This year the Mukti Tank has proved itself to be a very valuable insurance as regards water-supply to the irrigation in the system. The natural supply in the river fell off very rapidly in April, and in May was only about $1\frac{3}{4}$ cubic feet per second. The tank sluices had to be left open throughout the hot weather to provide a supplementary supply of about $5\frac{1}{2}$ cubic feet per second in April and 11 cubic feet per second in May. In the monsoon, also, an intermittent supply had to be provided from the tank until August 12th, when the Pánjhra came down in flood. In October the river again ceased to afford a sufficient supply; the discharge fell with great rapidity to only $1\frac{1}{2}$ cubic feet per second in the middle of November; and although it increased again to 3 cubic feet per second at the end of December, when the upper bandhárás were taking less water, practically the Lower Pánjhra irrigation was dependent on the tank throughout the whole period from October 27th to the end of the hot weather.

2. The quantity of water stored in the tank on October 27th was 216·5 million cubic feet, and it appeared to be very doubtful whether this quantity would last out the hot weather. It was, therefore, determined to limit the supply to the permanent bágáyat—a measure of simple justice, considering that the permanent bágáyat rates had been considerably enhanced on account of the insurance which the tank provides. Water was accordingly refused for rabi on jiráit land, and generally all fresh applications were rejected. The irrigators were also warned to prepare their wells where they had wells at hand, and a regular system of rotation was introduced. A careful forecast of the supply required month by month was made, and the discharge from the tank regulated accordingly. The tank water level fell to zero on June 4th, and on the next day a flood occurred in the river, and general rain set in which removed the anxiety previously felt.

There were no complaints of the management, or applications for remissions, so that the working may be regarded as having been successful. It is, however, to be regretted that the water did not suffice for rabi jiráit irrigation, and the people outside the 'Thals' were much disappointed at not being allowed to irrigate wheat. On the other hand, it was a good opportunity of showing the people that the permanent bágáyat, which pays much higher rates than jiráit irrigation, has superior claims, which are recognized.

3. The rainfall during the year was a trifle more than that of the previous year, viz., 13·56 inches during the year against 13·10 of 1888-89 and 24·38 inches, the average of the past 15 years. The way in which the rain was distributed over the season was, however, much more beneficial than in the previous year. The July rainfall was heavy, which is a very favourable condition for the monsoon crops. This accounts for there being so little monsoon irrigation, as shown in the table below:—

Months.					RAINFALL.		IRRIGATION.	
					1888.	1889.	1888.	1889.
					Inches.	Inches.	Acres.	Acres.
June	...	...	...	...	5·50	2·71	172	37
July	...	...	...	...	2·30	5·21		
August	...	...	...	...	1·48	1·39		
September	...	...	...	...	1·35	3·53		
Total					10·63	12·84	172	37

Irrigation. 4. The total area of new land irrigated during the year was—

					Acres.
Kharif	...	...	...	...	359
Rabi	...	...	...	...	225
					<u>584</u>

and in the mámul bágáyat or permanent irrigation—

					Acres.
Kharif	...	...	...	...	1,226
Rabi	...	...	...	...	463
					<u>1,709</u>

Total irrigation amounted to 2,293 acres.

Assessment. 5. The assessment on these areas amounted to—

				Rs.
Enhanced water-rates on permanent bágáyat	...	...	...	5,870
Irrigation share of land revenue	...	...	...	6,628
Assessment on new land	...	...	...	5,327
				<u>17,825</u>
Total Water-rates	...	...	...	17,825
Add for miscellaneous revenue	...	...	...	578
				<u>18,403</u>
Gross Revenue	...	...	...	18,403

As regards the assessment on jirát land, it has to be explained that the revised revenue survey came into operation during the year. By the revision a large number of fields which had been previously pátasthal, were degraded into jirát, but the owners of these fields neglected to send in applications for water, and in measuring up the crop irrigation it was found that the thals as newly settled were not defined, and the information as to which fields were bágáyat and which were jirát could not be ascertained either from the village records or from the Revenue Department. *Prima facie* it appeared as if a determined effort was being made by the villagers to pay neither crop rate nor bágáyat rate, and accordingly penal assessments have been made. It is, however, very probable that some of these penal assessments will be remitted when the enquiry is completed. The area penally assessed is 125 acres at Rs. 20 = Rs. 2,499. At the simple crop rate the assessment would be Rs. 250, so that Rs. 2,249 represents penal assessment.

In connection with the revision survey it may be as well to note here some of the results. The only villages affected as yet are Mudhi and Mandal, and it appears that about 33 per cent. of old bágáyat land has been given up, while the rates on the remainder have been raised by about one rupee. The cause of this very serious deterioration of the bágáyat area seems clearly accounted for by a comparison between the rates paid for water under the bágáyat and the crop-rate systems. On an estimate of what the crops actually grown in the permanent bágáyat thal would have paid on the crop-rating system, it is found that whereas Rs. 13,688 for water is actually paid, jirát land growing the same crops would have paid only Rs. 7,681. Under such conditions the old mode of assessment appear to be doomed, and the ancient system of distribution and internal economy seems likely to go with it.

Realizations. 6. The realizations amounted to Rs. 15,379 during the year, as under :—

Enhanced water-rates on old land	...	...	Rs.	5,848
Irrigation share of land revenue	...	...	"	6,628
Water-rates on new land...	...	...	"	2,903
				<u>15,379</u>
Total	...	...	Rs.	15,379

Outstandings of revenue.

7. The outstandings of revenue amount to—

Enhanced water-rates	...	...	Rs. 40
Water-rates from new land	...	...	„ 83
Total	...	Rs. 123	

There were no remissions.

Area applied for and actually assessed.

8. The following is a comparison of areas for which applications were received and which are actually assessed :—

Area.		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
Applied for	...	372	92	464
Assessed	...	359	225	584
Difference	...	-13	+133	+120

The decrease in the kharif area actually assessed is due to underestimate of the areas for which applications were sent. The increase in the rabi areas is due to waste of water and irrigation without permission which has been penalty assessed.

Cost of crop measurements.

9. The cost of measurements of irrigation in dry land amounted to Re. 0-1-8 per acre.

Working expenses.

10. The working expenses amounted to Rs. 8,090 against Rs. 10,065 in the previous year.

Revision of scale for water-rates for new land and its effect.

11. The following is a comparison of the revised scale of water-rates for irrigation in new land introduced during the year with that in the previous year :—

Crops.		Old Scale.	New Scale.
		Rs. a. p.	Rs. a. p.
I.—Perennial	...	10 0 0	10 0 0
II.—Eight months	...	3 0 0	4 0 0
III.—Four months and rabi	...	1 8 0	2 0 0
IV.—Monsoon dry	...	0 4 0	1 0 0
V.—Hot-weather	...	4 0 0	4 0 0

The irrigation in dry land under the above classification was as under :—

Perennial	...	196 acres.
Eight months	...	221 „
Four months and rabi	...	134 „
Monsoon dry	...	13 „
Hot-weather	...	19 „
Waste of water	...	1 acre.
Total	...	584 acres.

The assessment amounts to Rs. 5,327 against Rs. 3,094 under the previous scale. There has thus been a gain of Rs. 2,233. Although the area irrigated during the year is less by nearly 200 acres than that in the previous year, it is due to the nature of rainfall described above, and cannot be ascribed to the increase in water-rates.

Evaporation and absorption.

12. The following figures represent the calculated evaporation and absorption from the tank after making deductions for leakage gauged below the dam :—

Evaporation and absorption on mean water area during the kharif season from April 1889 to September 1889 (168 days)	...	4.85 feet.
Do. do. rabi season from October 1889 to January 1890 (112 days)	...	1.96 „
Evaporation and absorption on mean water area during the hot season from February to March 1890 (59 days)	...	1.44 „
Average daily evaporation during the year...	...	0.0243 „

13. The duty of water, according to usual calculation, is seen from Statement No. I—E. Special experiments according to the method described in the previous report were made in the rabi season to ascertain the duty of water and the quantity required to mature a Banshi wheat crop measuring 1 acre and 14 gunthás in Survey No. 152 under the Dhulia Channel. The result is tabulated below :—

Name of Crop.	Number of waterings.	Total quantity used.	Duty calculated to a base of 4 months (123 days).
		Cubic feet.	
Wheat	4	122,275	117

(7).—KA'DVA RIVER SYSTEM.

The works of this system, described in detail in previous reports, are as under :—

I.—*Waghda Tank* is a storage reservoir for supplementing the natural river supply of the following canals, and is nearly completed. It has been for five years in partial operation, to the extent now of fully one-third the sanctioned capacity.

II.—*Palkhed Canal*.—A new work in operation since 1873-74. The tail portion of the main distributary and some minor branches are not yet constructed, and need not be begun till the Waghda tank is brought more fully into operation.

III.—*Ojhar Támbat Canal*.—An old native work improved in 1874-75. The canal was extended during the year (for a length of $2\frac{1}{2}$ miles), but the extension was not completed nor brought into operation during the year. Further extension is deferred, as per No. II above.

IV.—*Waddli Canal*.—An old native work improved in 1869, and practically completed.

V.—*Sukena Bandhára*.—Now omitted from the system, the land being irrigable from No. IV; vide last report, i.e. for 1888-89.

2. The waste weir of the tank was running for 82 days, and the tank filled easily enough; but the natural river supply for the canals was scanty, and except for the Wadali Canal, for which river supply sufficed throughout the year, the tank supply had to be used during the hot weather and again from the 16th December 1889 to the 6th June 1890.

3. The total draw-off from the tank from 16th December 1889 to 31st March 1890 was 108 million cubic feet, of which 77 million cubic feet were measured as passed through the outlet and 6 million cubic feet as leakage (used on the Palkhed Canal); the remainder, 25 million cubic feet, was lost by evaporation and absorption, making the loss during 106 days equal to 1.75 feet in depth on the average surface.

4. The expenditure on Capital account during the year was Rs. 14,215, viz. (1) for Waghda Tank Rs. 10,991.

(2) for Ojhar Támbat Rs. 3,224.

5. The undermentioned works were executed during the year:—

I.—*Dam Embankment*.—(Sanctioned level R. L. 141, rising to R. L. 148 at gorge.)

(1) *Gorge Embankment*—length 300 feet from chainage 4,600 to 4,850 completed to R. L. 133; and from 4,550 to 4,600 or 50 feet to R. L. 137.

(2) *Flank Embankment*—from chainage 4,850 to 5,187 raised on the average to R. L. 138 and from 4,300 to 4,550 to R. L. 139; rest nearly completed before.

(3) *Reconstruction of work & to 1 new berm*.—All sub-heads completed, except a little making up of slopes.

General.—Whole embankments nearly completed; only a small part of filling at gorge being left to be done, to complete all that need be carried out at present or until the cut in waste weir is closed.

II.—*Outlet*:

(1) *Coping of Tower*.—Masonry work completed.

(2) *Gauging Weir*.—Masonry work, &c., completed and embankment nearly completed.

III.—*Ojhar Támbat Canal*.—Extended, nearly complete for a length of $2\frac{1}{2}$ miles, and vertical falls constructed for this part.

6. The mean rainfall during the year as gauged at two stations, viz., Pákhed at canal head and Niphád near the tail, was 17·64 inches, being 30 per cent. less than the average (25·23 inches) of the previous sixteen years.

7. The area irrigated during the year under the (three) canals was 3,090 acres as compared with 2,637 acres applied for. The difference is due to the areas in applications being only approximate; as is usually the case, the actual exceeded the area applied for.

8. The following tables show—

(1) the areas irrigated and assessments of each canal during the year, and
(2) similar average figures of the previous four years:—

1889-90.

Canals.				AREAS.			ASSESSMENT.		
				Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pákhed	Canal	...	...	1,331	980	2,311	6,103	2,230	8,333
Ojhar Támbat	do.	...	...	216	47	263	719	183	822
Wadáli	do.	...	...	256	260	516	755	549	1,304
Total				1,803	1,287	3,090	7,577	2,882	10,459

Average of four years 1885—89.

Pákhed	Canal	...	...	577	878	1,455	2,992	1,659	4,651
Ojhar Támbat	do.	...	...	98	185	283	534	352	886
Wadáli	do.	...	...	93	140	233	275	249	524
Total				768	1,203	1,971	3,801	2,260	6,061

In addition to the areas shown above, 326 acres under the Wadáli Canal were assessed as irrigated under "Mámul Bágáyat", the annual irrigation share for which amounts to Rs. 2,241.

9. The area irrigated in 1889-90 is 23·75 per cent. greater than that of the previous year, and 57 per cent. greater than the average of the previous

four years. In the case of the kharif areas there has been increase on all the canals; there is decrease in rabi on the Pálkhed and Ojhar Támbat Canals and increase on Wadáli Canal. The decrease in the case of the Pálkhed Canal is due mainly to early applications whereby the nomenclature is altered—taking the two seasons together there is increase. The decrease in the case of the Ojhar Támbat Canal is due to the scarcity of natural supply. Rainfall apart, it is observed that the areas generally tend to increase steadily, and it is expected they will continue to do so, and the Ojhar Támbat Canal area ought to extend when the tank supply is increased and shown to be assured; but some improvement is needed to let this supply pass in sufficient quantity from the Pálkhed Canal to the Ojhar Támbat Canal.

10. The principal crops for the year are shown below, with average figures for the four preceding years:—

Name of Crop.				For the year 1889-90.	Average of the four pre- ceding years, 1885-89.	Increase.	Decrease.
				Acres.	Acres.	Acres.	Acres.
Wheat	...	...	...	836	604	232	...
Ground-nut	...	...	...	664	368	296	...
Gram	...	...	...	176	188	...	12
Sugarcane	...	...	...	275	307	...	32
Vegetable	...	...	...	297	222	75	...

11. There is a noticeable increase, 50 per cent., during the year, in the area of ground-nut; and the figures for the year are nearly double those of the previous average. The increase is attributed to the high price at which produce was sold last year. Jágri sold at a low rate; to this cause, and probably to some want of confidence in the tank supply, is to be attributed the falling off in area of sugarcane. The figures for the year are 275 acres only as compared with 375 acres in the preceding year. The lateness of the monsoon, the subsequent scantiness of the rainfall, and the scarcity of fodder were the main causes of increase in the areas of bájri, khondia and tág, which compare with those of last year as under:—

				1889-90. Acres.	1888-89. Acres.
"Bájri"	...	...	...	217	2
"Khondia"	...	...	...	218	57
"Tág"	...	...	...	174	16

"Tág" is irrigated, as a rule, merely to be ploughed down for manure; in the present case it was mainly used as fodder. Such increases account for nearly the whole increase of the year; but though they are ephemeral, and do not greatly repay Government, they are of great value to the cultivators.

12. The total maintenance charges on the (three) canals during the year amounted in aggregate to Rs. 4,671, divided as follows:—

				Rs.
I.—Maintenance and repairs	...	...	...	2,904
II.—Establishment	...	...	...	998
III.—Tools and plant	...	...	...	158
IV.—Share of collection charges	...	...	...	472
V.—Indirect charges	...	...	...	139
Total				4,671

The total charges are considerably less than the previous average (of four years) Rs. 5,915. The cost of repairs was rather above the average. It was enhanced by items on which future saving is probable. The cost of collection—nearly double that of previous average—is proportionate to the revenue.

13. The total assessment during the year amounted to Rs. 10,487 (including assessment Rs. 23 on alluvial land above Pálkhed Canal), and the total realizations to Rs. 9,443. The outstandings—Rs. 5,018—at end of the year are accounted for as under:—

(1) Rabi assessments amounting to sent for realization after the close of the year.	Rs. 2,882
(2) Balance of the current year's kharif assessment (including the balance, Rs. 8, on account of assessment on alluvial land for 1889-90) could not be recovered at once, the year being a bad one generally; the balance is nearly all recovered in 1890-91.	" 2,136

Total ... Rs. 5,018

Besides direct water-rates, revenue is also obtained from the following sources:—

(1) Plantations and other canal produce	Rs. 284
(2) Rent of buildings ...	" 11
(3) Alluvial (Gálper) land...	" 28
(4) Enhancement of land assessment ...	" 594

14. The sub-division of survey into irrigation (pôt) numbers was commenced early in the year on the Pálkhed Canal, but was suspended by order before any progress had been made.

15. A permanent temporary measurer is employed to measure the crops, at a cost of Re. 0-1-3 per acre irrigated.

16. *Water duty.*—Eliminating questionable extremes, the duty of water on the three canals varied per cubic foot per second from 30 to 60 acres during the hot weather, 60 to 300 acres during the kharif season, and 90 to 250 acres during the rabi season. Observations for ascertaining how much water is necessary to mature different crops are still incomplete; the nature and depth of different soils under the canals is so various as probably not to admit of useful results being obtained. Arrangements will, however, continue to be made to obtain as accurate information as is possible.

17. *Leakage Experiments.*—Owing to demand for water throughout the year only two experiments were made, viz., at the end of the kharif season:—

(1) On Pálkhed Canal there was a loss by leakage and evaporation of 0·44 cubic foot per second per mile, or nearly 48 per cent. of the supply.

Before taking observations for leakage experiments all the irrigating outlets were closed; gaugings were made with ordinary floats and were read in each mile, which gave the average result of loss as 48 per cent. The only feasible way of reducing the leakage seems to be to keep the canals clear of silt and weeds. No other precautions seem practicable, unless in the way of managing all outlets better, escapes included.

(2) On the Ojhar Tâmbat Canal there was a loss of 0·49 cubic foot per second, or nearly 30 per cent. of the supply.

18. The open lines of canals, the areas irrigated, and the actual number of cubic feet of water utilized during the year were as under:—

Name of Canal.	Open lines. Miles.	Areas irrigated. Acres.	Cubic feet of water utilized.
Pálkhed Canal (with distributaries 14·87 miles) ...	11	2,311	170,514,720
Ojhar Tâmbat Canal ...	1·75	263	18,903,456
Wadáli Canal... ..	8·62	516	48,870,432

19. *Canal closures.*—There were 9 closures in all during the year for clearance of silt and aquatic plants, &c. Of these, 6 were on the Pálkhed Canal and 3 on the Wadáli Canal, aggregating 28 and 19 days respectively.

20. The total number of trees standing on the canals at the close of the year was 11,500. Of these, the principal were as under :—

					No. of Trees.
Báhhul ...	...	...	...	...	9,007
Mango ...	...	...	...	...	705
Nimb ...	...	...	...	...	498
Moho ...	...	...	...	...	635

The expenditure on plantation during the year was Rs. 150 from Revenue Account. The total expenditure to date is Rs. 2,106 from Capital Account and Rs. 3,182 from Revenue Account.

(8).—PRAVARA RIVER WORKS—LAKH CANAL.

1. The area irrigated during the year was 322 acres, of which 255 acres were kharif and 67 acres were rabi crops. The total area irrigated shows a decrease of 492 acres on the area of the last year. The decrease is due chiefly to the seasonable and good rain in kharif. The people have lost confidence in the precarious supply of the canal, and no better results can be expected until a storage reservoir is made. It was, therefore, suggested to close the canal altogether, clear it properly of silt, and keep it in reserve for years of short rainfall only. The Superintending Engineer and the Collector have concurred in the suggestion, and the question is now before Government for decision. It is not, however, desirable to close it till next year, as applications for water have been granted.

Comparison of area applied for and irrigated. 2. The following statement compares the area applied for and irrigated during the year :—

Year.	KHARIF.		RABI.		TOTAL.		AREA LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1889-90 ...	270	255	94	67	364	322	15	27	42

The area applied for, but not irrigated, is 13 per cent. of the area irrigated.

Water-rate assessment. 3. During the year the water-rate assessment amounted to Rs. 1,259, detailed as below :—

Kharif	...	...	...	...	Rs. 1,115
Rabi	...	...	...	...	„ 144
					<u>Rs. 1,259</u>

The total amount of the assessment in the last year was Rs. 1,856 ; there is, therefore, a decrease of Rs. 597, or Rs. 32 per cent.

4. The incidence of water-rate per acre was Rs. 3.91 against Rs. 2.28 in the previous year, which is due to the increase in area of fodder crops.

5. The Capital expenditure during the year amounted to Rs. 1,082, and was incurred in constructing 2 regulators on the main canal and a head regulator and an overbridge for Capital account.

Pácheagaon-Punatgaon distributary. All but one regulator are completed. As on the Ojhar Canal, a survey was undertaken for improving the canal, so as to profit by the proposed Sámrád Tank.

6. The working expenses of the year were as follows :—

			Rs.
Maintenance and repairs	...	...	2,755
Share of establishment	...	...	1,205
Tools and plant	...	...	83
Share of collection charges	...	...	94
Indirect charges	...	...	169
Total			4,306

The working expenses of the last year amounted to Rs. 3,037. The increase is due to the special and ordinary repairs done to the canal buildings, which roughly cost Rs. 700. Thus the charges for maintenance and repairs and revenue management, exclusive of the special revenue establishment, amounted to Rs. 2,055.

7. The old water-rates were enforced since the commencement of the year.

8. The cost of measurement during the year was Re. 0-3-7 per acre against Re. 0-0-11 last year. The high rate was due to the fact that the permanent measurer had more than enough to do on the Ojhar Canal, and an extra measurer was employed to help. The cost will be reduced if the irrigation increases.

9. The duty of water per cubic foot per second varied, on the average, from 3 to 16 acres in the hot weather, from 9 to 16 acres in the monsoon, and from 17 to 26 acres in the rabi season. The cause of the poor duty is that some of the irrigable land in the first 6 miles only was irrigated. The canal was in operation for 16 miles, and between 6 to 10 miles it runs close to the river side; so only a small area was under irrigation.

10. The rainfall during the year as gauged at Málunja was 26·17 inches, or 0·51 inches more than the average during the last five years.

11. The river supply was abundant in the monsoon and early cold weather. It began to fail in January, when an earthen dam, 2 feet high, was put on top of the weir, as usual, to increase the back-water during the hot weather.

There were several demands for water below the 10th mile of the canal, but the villagers would not offer to clear the length of the canal up to their fields to pass down supply, nor guarantee any minimum amount of irrigation. The length of the canal in operation will be increased during 1890-91 by six miles.

12. At the end of the year, the number of trees on this canal was 18,359. The number of principal kinds were :—

Bábhul	...	...	12,206	Mango	...	...	711
Nimb	...	...	2,337	Bor	...	...	501
Jámbul	...	...	1,070	Bámboo	...	...	282

The total number last year was 19,272. The reduction is due to the cutting of a great many of the commoner trees whose shade was becoming injurious to the neighbouring mango and other valuable trees; also to the withering of some trees which were attacked by white ants. The wood was sold by public auction.

(9).—MUTHA CANALS.

Assessments of revenue.

During the year under review the assessments amounted to Rs. 2,20,405, detailed as follows :—

	Rs.
Water-rates	1,21,244
Sales of water	2,793
Water-supply of towns	87,521
Plantations and other canal produce	1,395
Water-power	3,600
Rents of buildings	208
Miscellaneous	3,664
Total	2,20,425

The total amount of assessments in the previous year was Rs. 2,16,112; there is, therefore, an increase of Rs. 4,313, or 1·99 per cent., which must be considered satisfactory. The increase in water-rates as compared with the previous year was Rs. 6,723.

2. The area irrigated during the year was 13,338 acres, of which 7,653 were kharif and 5,685 rabi crops: the total shows an increase of 3,574 acres as compared with the area irrigated in the previous year, or 37 per cent. The increase in the kharif season was due to the fact that sugarcane planting being prohibited round Poona, other lands outside the prescribed limit were taken up for that purpose, while the prohibited areas were at the same time used for vegetable cultivation; and in the rabi season there was a want of seasonable rainfall. There was also more water in the lake at the commencement of the season. The average rate per acre was Rs. 9·09 against Rs. 11·73 in 1888-89, and the decrease is due to raising the rate on sugarcane round Poona and lowering rates on other perennial crops to encourage the substitution of one for the other.

3. The revenue derived from water-supply of towns amounted to Rs. 87,521, showing an increase of Rs. 113 only on that of the previous year.

4. The average daily consumption of water in the cantonment and civil station of Poona was 730,741 gallons during the year. Taking the population at 36,000 as per last census, the average consumption per head per diem comes to 20·29 gallons.

5. The working expenses of the year amounted in all to Rs. 86,734, of which Rs. 46,578 are debitable to the maintenance of irrigation and Rs. 40,156 to the maintenance, &c., of the water-supply, &c.; the latter amount includes expenditure incurred in pumping done by steam and water power. The cost of the maintenance of the irrigation works—Rs. 46,570 against Rs. 41,223 in the previous year—represents a rate for maintenance, administration, &c., of Rs. 529·29 per mile of main canal opened, and Rs. 3·49 per acre irrigated. The excess of this year over last year is due to re-adjustment of establishment charges.

With regard to these results it has to be noted that an average of about 730,000 gallons are taken from the canal daily for the water-supply of Poona Cantonment, which thereby curtails the area irrigated, and consequently increases the incidence of working expenses per acre.

6. Deducting the total working expenses, or Rs. 86,734 and Rs. 427 on account of remission and refunds, from the total earnings Rs. 2,20,425, the net profit from the work amounts to Rs. 1,33,264, or 2·13 per cent. on Rs. 62,59,250, the total entire Capital outlay to the end of the year.

7. The areas irrigated were ascertained by actual measurements, the greater part of which were made by measurers specially entertained for the purpose, and the remainder by one of the sub-overseers and one of the inspectors, when time could be spared from their ordinary work, and from 9 to 12 per cent. of the area was checked by the subordinates in charge. The cost of measurements amounted to Rs. 1,244, or at the rate of 1 anna and 6 pies per acre as compared with 2 annas and 1 pie per acre in the previous year. The saving is chiefly due to a more rapid system of measurements having been introduced in connection with the low-rated crops.

8. The highest duty of water obtained during the dry season was that for the month of April, when the area irrigated was 4,424 acres and the average discharge 61.00 cubic feet per second, giving a duty of 72.52 acres per cubic foot per second. The lowest duty in the dry season was in March, when the area irrigated was 3,955 acres and the average discharge 98.18 cubic feet per second, giving a duty of 40.28 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for the rainy season, the canals being single-banked.

9. The rainfall of the year varied along the canal from a maximum of 33.29 inches at Khadakvasla to a minimum of 20 inches at Kedgaon.

10. The characteristics of the rainfall last year were that till just before the end of the rains the rainfall was below the average, and in consequence a large number of applications were received for rabi at the end of the kharif season. Just at that time, however, excessively heavy rain fell, doing much damage to the young rabi which was just then germinating. Finally no rain fell after the middle of October, and the season was, therefore, unfavourable generally for rabi, resulting in a large increase in the area irrigated in that season.

11. From time to time Government have been pleased to sanction the supply of water, either gratuitously or at reduced rates, for various purposes. The grants have been made to the poorer classes in the Poona Sadar Bazar, and hospitals, &c., have received water at the reduced rate of 3 annas per 1,000 gallons.

A statement showing the quantities of water thus supplied, the amounts paid, and the value of water at the usual rates accompanies, and from it it will be seen that the difference between the value of water at normal rates and at the special reduced rates amounts to Rs. 5,833. This sum represents a free grant made by the canal to the persons and corporations mentioned in the list. As the work is classed as "Productive", and not "Protective", it is submitted that this amount might be taken credit for in the accounts of the work by debit to some other fund.

If the amount of the above items, viz., Rs. 5,833, be added to the net revenue shown in paragraph 6 *ante*, making the total net revenue Rs. 1,39,101, the percentage of net revenue on total Capital expenditure becomes 2.22.

It may not be out of place to mention here that, as stated above, although the work is classed as "Productive" yet the revenue account has to bear a number of charges which, it is submitted, are not properly debitable to it: for example, the maintenance of the Ghásirám, Civil and Grant tanks, which are merely receptacles for the surface drainage of parts of the cantonment; also the Mánik nála, which is simply a main drain for carrying off the surface drainage of a large quarter of the cantonment, and a number of wells and tanks.

12. The following is the comparison of areas applied for and those actually irrigated :—

	AREA APPLIED FOR.			AREA IRRIGATED.			DIFFERENCE.	
	Kharrif.	Rabi.	Total.	Kharrif.	Rabi.	Total.	More.	Less.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mutha Right Bank Canal.	10,186	5,068	15,254	7,092	5,449	12,541	...	2,713
Mutha Left Bank Canal.	462	210	672	561	236	797	125	...
Total ...	10,648	5,278	15,926	7,653	5,685	13,338	...	2,588

In the case of the Mutha Right Bank Canal the falling off in the irrigated area as compared with the applications in the kharrif season was due partly to rejection of applications owing to want of water in hot weather; also to heavy rainfall after applications were received during monsoon, which rendered the canal water unnecessary. The other figures for both canals do not call for special remarks.

13. Remissions of Rs. 91 have been granted during the year, of which Rs. 49 are due to a bad debt, the person concerned having left the country, and the remainder principally to remission of penal assessment.

Refunds. 14. Refunds of Rs. 336 were made during the year due to erroneous assessment.

15. In accordance with Government Resolution No. 48 W.I.—664 of 27th March 1890 the following précis of the facts stated in this office letter No. 134 of 10th January 1890 to the Superintending Engineer, Central Division, is given.

In Mundhwa village, taluka Haveli, a certain crop of sugarcane, in area $6\frac{1}{2}$ acres, was planted in March 1888. The crop was kept in the ground until January 1890, when it was crushed. The owner then stated that he had been offered Rs. 2,200 for the crop as it stood in the ground, but that he had refused the offer, expecting to make more by crushing it himself. Taking the value of the crop to be Rs. 2,200, the amount offered for it, the profits work out as under :—

Value per acre ...	...	Rs.
		339
Deduct—		
Water-rates, including penal assessments	Rs. 70 nearly.	
Land assessment...	8	
Other expenses at	105	
	183	
Net profit per acre	156	

16. At the end of the year the number of trees on the Right and Left Bank canals and on the head works was 56,946. The numbers of principal kinds were—

Bábhul	43,153	Mango	2,980
Jámbul	680	Bámboo...	564
Umbar	406	Sandal ...	317
Nimb ...	1,169	Hiwar ...	497
Bor ...	825	Soundad	661
Shindi	3,570	Tamarind	243

The number of miscellaneous trees was 1,881.

4. The measurement of the irrigated areas was taken by one measurer with 3 khalásis under him, and was checked by the subordinate in charge to the extent of 10 per cent. The cost on this account was Rs. 421, representing Re. 0-2-8 per acre irrigated. This cost would have been nearly the same, and the rate proportionately less, had there been a considerably increased area to measure.

5. The working expenses of the year, including indirect charges, amounted to Rs. 13,231. Rs. 667 were spent in special repairs to the sluice gates of both the high-level canals; including this, the maintenance charge was Rs. 7,945, which gives Rs. 165 per mile. This rate is necessary, as the canals have not been provided with proper cross drainage works to pass off rain water, and require constant clearance of silt and weeds which grow abundantly, the canals being in black soil over their whole length.

6. Owing to the above reason, the plantations on the canals, as also those on the contour of the tank, are very flourishing. Some of the mango trees have now begun to yield fruit, and after a few years will appreciably add to the revenue. On this tank and canals the bábhul grows very well and requires little supervision. It brings considerable revenue yearly. This year the sale of this wood brought Rs. 4,125 and the sale of grass Rs. 1,052. The expenditure on plantation was Rs. 835 only. The trees above and below 5 feet are 70,112 and 77,629 respectively.

(a) The cultivators on this tank and canals have very frequently complained of the bábhul plantation preventing crops from growing in their vicinity, and are under the impression that, so far as the flowers from the bábhul cover the ground, crops will not grow. This in very many cases is so; but whether or not the flowers are the cause of this sterility, could not be determined.

(b) Complaints are also made against aloes for fencing. The roots extend so that in many cases crops will not grow within 50 feet of the fence, and that near the fence the roots are so matted under the surface that the ground cannot be ploughed.

(c) On the Ekruk Tank boundary this matter was investigated: here the soil varied from 6 inches to 1 foot over moorum, and 20 to 25 feet from the fence was found a mass of matted fibrous roots, and almost everywhere the roots extended from 50 to 60 feet from the fence.

(d) One petitioner requested that the aloe fence be eradicated and cactus planted in its place; but during the investigation this petitioner being present, and finding that cactus roots were worse than aloe, he said he had made a mistake, and requested that both be removed. With the consent of the petitioners the decision has been deferred till the crops had come up, when a further investigation will be made.

7. Special experiments were made on this canal to determine the duty of water, and the following table shows the results obtained and the quantity required to mature certain crops.

Table showing the quantity of water required to mature certain crops.

Name of Crop.	Area irrigated in Acres.	Cubic feet of water required to mature	For what period the water was given, &c.
Sugarcane	1	479,000	7th March 1889 to 13th April 1890.
Pánsál, i.e., rice superior	1	192,550	5th July 1889 to 15th December 1889.
Suki-sal, i.e., rice inferior	1	6,936	19th August 1889 to 29th October 1889. 2 waterings.
Ground-nut	1	82,170	2nd July 1889 to 18th December 1889. 6 waterings.
Wheat	1	42,800	23rd November 1889 to 7th January 1890. 4 waterings.
Jod wheat	1	77,280	15th November 1889 to 7th February 1890. 7 waterings. The crop was in low ground.

8. The following gives the loss in evaporation, absorption, &c., during the year :—

Quantity of water for use during the year	...	...	Cubic feet, 4,207,068,749
<i>Deduct—</i>			
Quantity discharged through the canals			
from April to March	...	723,385,728	
Quantity available for use in tank on 31st			
March 1890	...	2,366,710,005	
			3,090,093,733
Quantity lost by evaporation and absorption during the			
year = 6·5 depth of water in tank	...	1,116,973,016	

(11).—KRISHNA CANAL.

1. The proposal to form a storage reservoir on the Tārā River had to be abandoned for financial reasons, and a site for a reservoir on a smaller scale elsewhere is under consideration.

2. The rainfall for the last two years, as gauged at Gondi, is as follows :—

				Inches.
1888-89	...	...	...	34·82
1889-90	...	...	...	34·68

3. The area irrigated was—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1888-89	...	...	1,919	1,456	3,375
1889-90	...	...	1,667	2,065	3,732

This is 10½ per cent. in excess of the year before, and represents over 14 per cent. of the irrigable area. The area irrigated was 20 per cent. in excess of that applied for.

4. The assessments were—

			Kharif.	Rabi.	Total.
			Rs.	Rs.	Rs.
1888-89	...	...	22,268	5,236	27,504
1889-90	...	...	22,241	7,364	29,605

No remissions were required to be given. The result shows that irrigation is steadily progressing, the increase for the year being nearly 8 per cent. over the assessment of the previous year, while it is about 28 per cent. in excess of that of 1887-88. In addition, a sum of Rs. 2,779 was realized from other sources, making the total gross revenue for the year Rs. 32,384.

5. The average water-rate for the year was Rs. 7·9 per acre irrigated, being slightly less than that of the previous year. This would tend to indicate that the area under cultivation of the higher rated crops has been reduced, but whether this is due to the enhanced rates or to rotation of crops it is impossible to decide after only one year's trial; the matter will, however, be carefully watched and reported on next year.

6. The working expenses, as compared with those of the previous year were as follows :—

			Rs.
1888-89	...	...	17,554
1889-90	...	...	17,227

This shows a decrease of nearly 2 per cent., while it represents 53·2 per cent. of the gross revenue. The rate per acre irrigated is Rs. 4·61 as against Rs. 5·20 for the past year. Deducting working expenses from gross revenue we get Rs. 15,157 as the net revenue, which on an outlay of Rs. 6,54,564 gives a return of 2·3 per cent.

7. The cost of measurement was Rs. 491, being at the rate of annas 2 and pie 1 per acre.

8. The average discharge as gauged at the head and utilized was for the kharif 35·56 and for the rabi 57·44 cubic feet per second, which gives a duty of 47 and 36 acres respectively.

9. The number of trees on the canal, large enough to be classified, was 24,775, and in addition there were 2,270 saplings. All the trees were classed and marked at a cost of Rs. 301, the total expenditure on this head being Rs. 767, while the receipts from the sale of 1,055 trees which were cut down amounted to Rs. 1,800.

MINOR WORKS AND NAVIGATION.

(12).—KHA'RI CUT.

1. The rainfall during the year was 24·89 inches (which is just the average rainfall) against 13·58 inches the previous year. The supply in the river was sufficient to meet all demands up to the middle of September, after which it began to decrease rapidly owing to want of rain, and caused serious loss to rice crops owing to their not getting the last watering. The result was a great decrease in produce to cultivators and in revenue to Government owing to heavy remissions which had to be granted.

2. The area irrigated during the year shows an increase of 2,258 acres over that of previous year.

The figures are as follows :—

					Acres.
1888-89	...	...	...	...	13
1889-90	...	...	...	...	2,271

3. The remissions for the year amounted to Rs. 6,283, and the free grants to Rs. 1,617. The assessments, excluding the above remissions and free grants, amounted to Rs. 5,470.

4. The working expenses, including establishment, &c., for the year were Rs. 3,751 against Rs. 5,943 the previous year. The working expenses per acre irrigated came to Rs. 1·65.

5. The area under irrigation was measured by special establishment employed for the purpose, the cost being $9\frac{1}{2}$ pies per acre.

6. The average water-rate during the year was Rs. 2·40 per acre.

7. The actual supply abstracted from the Khári River during the kharif season at the head of the Khári Cut was 187 millions cubic feet, representing a constant flow of 17·76 cubic feet per second.

The area irrigated was 2,271 acres *plus* the area assessed on the Chándola Tank, namely 242 acres, making a total of 2,513 acres, which gives a duty of $141\frac{1}{2}$ acres per cubic foot of discharge.

8. The plantations on the Chándola Tank have been carefully attended to, and there was a slight increase in revenue therefrom.

(13).—HARTÁLA TANK.

1. The quantity of water stored in the tank during the monsoon was erroneously given in the administration report as 85·30 million cubic feet, instead of only 27·01 million cubic feet. The monsoon rainfall was 27·07 inches, and it is extraordinary that so little water was stored. From June 1st to July 17th, 9·49 inches of rain fell without producing any replenishment at all, and the intensity of the rainfall does not account for the result. On June 10th, 1·98 inches were gauged, and on the 13th 84 cents fell, and on the 29th one inch. In 1885 something similar occurred, when on June 12th, 13th and 14th, 3·63 inches produced no replenishment. The total monsoon rainfall (1889), 27·07 inches, did not suffice to keep the level of the water up to what it was at the beginning of the rains, although the intensity of the rain was considerable.

2. The past history of the work shows that the villagers are not able to utilize the water profitably, and the present year with only 66 acres of irrigation is a decided retrogression.

3. As the tank was dry throughout the hot weather, of course no perennial irrigation could be expected, and the monsoon rainfall being very favourable, wheat was the only important crop likely to require water. The decline in irrigated wheat is, however, general throughout the district. At Hartála only 55 acres of wheat were watered as compared with 122 acres in the previous year.

Assessment.

4. The assessment amounted to—

					Rs.	a.	p.
Water-rates	...	...	...	...	149	13	0
Other sources	...	...	...	...	864	1	2
Total					1,013	14	2

In the second item the large amount, Rs. 808-8-0, was on account of the protective rate of Re. 1 for this and the previous year on the area truly irrigable from the tank.

Realizations.

5. The realizations amounted to—

					Rs.	a.	p.
Water-rates	...	...	...	...	992	13	9
Other sources	...	...	...	...	864	1	2
Total					1,856	14	11

Outstanding.

6. The unrealized balance of revenue at the end of the year was—

					Rs.	a.	p.
Rabi demands sent for realization at the close of the year	...	...	...	...	123	15	0
Outstanding of former demands	...	...	...	...	66	1	8
Total					190	0	8

The outstanding is on account of water-rate assessed on the Mahárs' inám land, though not watered, according to the agreement of the villagers to pay water-rate on irrigable land whether watered or not. The Mahárs being unable to pay the amount it has been since remitted.

Working expenses.

7. The working expenses amount to—

					Rs.
Total in Public Works Department	...	...	...	...	2,759
Total, inclusive of charges for revenue collection	...	...	...	...	2,848

The latter, compared with the realizations during the year, exhibit a loss of Rs. 991 as the result. But this is due to the amount of Rs. 2,516, which had to be refunded on account of the revenue realized on land which was not actually watered.

Eliminating this item from the total charges for working expenses, the result is that there has been a profit of Rs. 1,525 during the year under report.

Cost of measurement.

8. The cost of measurement of irrigated crops has been Re. 0-1-3 per acre.

9. The following is a comparison of area applied for and area actually irrigated:—

				Kharif.	Rabi.	Total.
Applied for	...	...	...	7	63	70
Assessed	...	...	...	6	60	66

This trifling difference requires no remark.

10. There were no special observations made to ascertain the duty of water. But the duty, according to usual observations, was—

					Acres.
In the kharif season	...	...	...	...	120
In the rabi season	...	...	...	...	62

11. The revised scale for water-rates was introduced during the year. The following table shows the scale introduced now and the old scale :—

Description.	Old scale.	New scale.
	Rs. a. p.	Rs. a. p.
I.—Perennial	8 0 0	10 0 0
II.—Eight months	8 0 0	4 0 0
III.—Four months and rabi ...	1 4 0	2 0 0
IV.—Monsoon	0 4 0	1 0 0
V.—Hot weather	4 0 0	4 0 0

12. In the table below is given the areas of crops irrigated during the year and the revenue assessed under the existing scale compared with that derivable under the previous scale :—

	Area irrigated.	Revenue assessed.	Revenue under old rate.
	Acres.	Rs.	Rs.
I.—Perennial	1	7	6
II.—Eight months	7	28	21
III.—Four months and rabi ...	57	114	71
IV.—Monsoon dry... ..	1	1	1
V.—Hot weather... ..	...	...	...
Total	66	150	98

There has thus been a gain of Rs. 52 in the revenue under the revised scale. The decrease in the area irrigated compared with the area of last year has no connection with the revision of the scale of water-rates, but is due to the cause given in paragraph 2 above.

13. The calculated loss by evaporation and absorption was—

	Depth lost.
	Feet.
Kharif season—from April to September (92 days) ...	1.89
Rabi season—October to January (122 days) ...	2.30
Hot season—February and March (16 days) ...	0.87
Average daily evaporation during the year ...	0.0198

(14).—MHASVA TANK.

- The tank, which was empty at the beginning of the year, had its first replenishment on 8th of June, 1889, and it was full on 15th August 1889.
Storage.
- The rainfall of the year amounted to 24.80 inches against 17.24 inches in 1888-89, 30.93 inches in 1887-88, and 29.99 inches, the average of the past twelve years.
Rainfall.

3. There has been no perennial nor hot-weather irrigation in the early part of the year owing to the failure of the tank, but, later on, the following crops were watered during the kharif season :—

				Acres.
Plantains	...	...	...	3
Chillies and other condiments	...	...	...	8
Rice, Dodki	...	...	...	2
Cotton	...	...	...	3
Total				16

In the rabi season—

				Acres.
Wheat	...	...	...	176
Gram	...	...	...	13
Total				189

were watered. The total irrigation thus amounted to 205 acres. Wheat shows a decline from 426 acres last year.

Assessment.

4. The revenue assessed amounted to—

				Rs.	a.	p.
Water-rates	...	...	...	452	1	0
Other sources	...	...	...	167	2	3
Total				619	3	3

Realizations.

5. The realizations were—

				Rs.	a.	p.
Water-rates	...	...	...	652	10	0
Other sources	...	...	...	167	2	3
Total				819	12	3

6. There has been no outstanding of revenue, except Rs. 381-12-0 on account of rabi demands sent for realization after the close of the year.

Outstandings.

7. The working expenses amounted to Rs. 1,671, being Rs. 122 in excess of those for 1888-89. The excess is due to a robbery of Rs. 149 reported at the time to Government. Eliminating this item, it will be seen that the expenses were less during the year.

Working expenses.

8. The cost of measurements of area irrigated during the year was Re. 0-1-8 per acre.

Measurement of crops.

9. The following is a comparison of the area applied for during the year with the area actually assessed :—

		Kharif	Rabi	Total
Applied for	...	21	192	213
Assessed	...	16	189	205

The small difference is due to slight over-estimates of areas of fields in applications and to one of the irrigators not having watered his field, his water application being cancelled.

Duty of water.

10. There were no special observations for the duty of water, but according to usual observations it is as under :—

				Acres.
Kharif	...	...	...	34
Rabi	...	...	...	59

Water-rates. 11. The scale of water-rates was revised during the year, and compares with the old as below :—

Crops.	Old.			New.		
	Rs.	a.	p.	Rs.	a.	p.
I.—Perennial	8	0	0	10	0	0
II.—Eight months	3	0	0	4	0	0
III.—Four months and rabi	1	4	0	2	0	0
IV.—Monsoon dry	0	4	0	1	0	0
V.—Hot weather	4	0	0	4	0	0

The assessment on the area irrigated during the year, *viz.*, 205 acres, under the old and new scales, according to above classification, is as under :—

	Area irrigated.	Assessment.	Assessment under old scale.
	Acres.	Rs.	Rs.
I.—Perennial	3	30	24
II.—Eight months	8	39	27
III.—Four months and rabi	189	378	236
IV.—Monsoon dry	5	5	1½
V.—Hot weather ... ..	.....	.....	.....
	205	452	288

This shows that there has been a gain of Rs. 164 in the revenue ; and although the area irrigated is only half the average area irrigated from 1883-84 to 1888-89, the decrease cannot be attributed to the increase in the scale of water-rates, but is due to the failure of the tank in the early part of the year, and the general decline observed in the irrigation of wheat.

12. The following figures show the calculated results of evaporation and absorption :—

	Feet.
Kharif season—April to September (43 days) ...	1.32
Rabi season—October to January (111 days) ...	7.71
Hot weather—February and March (59 days) ...	3.27
Average daily evaporation and absorption during the year	0.0577

(15).—JÁMDA CANALS.

1. The Jámda Canals have now been in operation for twenty-three years.

The general character of the year's working closely approximates to the average.

2. The rainfall during the year was as follows :—

Gauge site.	1888-89.	1889-90.	Average up to 1888-89.
Jámda	16.62	19.15	26.84
Kolgaon	13.90	18.10	28.74
Bhadgaon Farm	17.94	22.56	28.90
Bhadgaon Kacheri	16.89	24.71	28.88

In June and September the rain was fair, in July it was very good, and in August light. The October rain was light at the head and fair towards the tail of the canals. Generally the rainfall was more favourable towards the tail. In August some of the monsoon crops had to be irrigated, but there was nothing like the general failure of rain which occurred in the previous year.

Irrigation.

3. The areas were as follows :—

	1888-89.	1889-90.
Kharif	2,220	743
Rabi	2,954	1,280
Total ...	5,174	2,023

The staple kharif crop is jowári, of which only 352 acres required water this year against 1,579 acres last year.

The staple rabi crops are wheat and gram. The latter was less than last year in the ratio of 246 to 386, and the wheat declined from 2,422 to 931 acres.

4. The river supply fell off very rapidly in April and May, and warnings had to be issued in the villages towards the tail, which probably accounts for the falling off in sugar.

River supply.

5. The deficiency in the river due to a scanty monsoon fall on the gháts attracted attention in November, and it was found that the diagram curve corresponded closely with that of the famine year 1877-78. A systematic distribution of water was put in force and worked satisfactorily, no applications for remission or complaints having been received. The water-supply was expected to suffice for 1,500 acres, but this area was not wholly applied for.

Distribution of water.

6. The area irrigated during the year amounted to—

Area irrigated and assessment.

	Acres.
Kharif	743
Rabi	1,280
Total ...	2,023

The revenue from crop assessment for the year was Rs. 4,973 and from other sources Rs. 419: total assessment Rs. 5,392.

Realizations.

There have been no remissions. The revenue realized amounted to—

	Rs.
Water-rates	7,137
Other sources	419
Total ...	7,556

• The unrealized balance of revenue is Rs. 3,132, of which Rs. 2,743 is on account of rabi demands sent for realization at the close of the year and the balance, Rs. 389, was on account of the outstanding of former demands which the Collector has realized after the close of the year.

Outstanding.

7. The rate for water assessed per acre amounts to Rs. 2-7-4 against Rs. 1-7-6 per acre in the previous year. The rise in the rate of assessment is attributable partly to the revised rates of assessment introduced during the year and partly to the greater proportion of more highly rated crops.

Average rate of assessment.

8. The working expenses during the year amount to Rs. 9,711, as under :—

Working expenses.

	Rs.
Repairs	5,301
Establishment	3,477
Tools and plant	100
Leave and pension allowance	487
Collection charges	346
Total ...	9,711

against Rs. 11,498 and Rs. 10,343 in the previous two years. The charge on account of establishment, though reduced, is still heavy, because for the greater part of the year a highly paid subordinate was in charge of the work. The arrangement has, however, been altered, and a still greater reduction in the charge is anticipated in the next report.

9. The cost on measurement of crops amounted to Re. 0-1-5 per acre.

Comparison of area applied for and assessed.

10. The following is a comparison of the area applied for and that actually assessed:—

		Kharif. Acres.	Rabi. Acres.
Applied for	...	742	1,226
Assessed	...	743	1,280

The increase in the rabi area is partly due to the applicants having underestimated the areas and partly to irrigation without permission.

11. The following table shows the revised scale of water rates introduced during the year in contrast with the old scale:—

Crops.	Old Rates.			Revised Rates.		
	Rs.	a.	p.	Rs.	a.	p.
I.—Perennial	10	0	0	16	0	0
II.—Eight months	3	0	0	4	0	0
III.—Four months and rabi	1	4	0	2	0	0
IV.—Monsoon dry	0	4	0	0	8	0
V.—Hot weather	4	0	0	4	0	0

Under the above classification a comparison of assessment under the old and new scale on area irrigated during the year is given below:—

Crops.	Area irrigated.	Assessment.	Assessment under old scale.
	Acres.	Rs. a. p.	Rs.
I.—Perennial	124	1,618 3 0	1,240
II.—Eight months	111	443 0 0	333
III.—Four months	1,253	2,559 15 0	1,599
IV.—Monsoon dry	520	267 9 0	133
V.—Hot weather	15	84 3 0	65
	2,023	4,972 14 0	3,370

The assessment on areas irrigated, when verified by the scale of rates sanctioned, differs, because, in cases where the watering has extended beyond the season, next season's rate has been charged and paid. In the case of perennial crops, the applications passed before the receipt of the revised scale have been charged for under the old scale; this area amounts to about 49 acres. The revenue under the old scale would have amounted to Rs. 3,370. There has thus been a gain of Rs. 1,593 by the new scale. Although the area irrigated during the year is less than half of that in the previous year, the decrease is not due to the enhancement of the scale, as the following comparison of averages shows:—

	Acres.
Average area irrigated prior to reduction of rates in 1883	1,134
Average irrigated since the reduction in 1883	2,335
Irrigated during the year	2,203

12. In the rabi season special experiments were made to ascertain the duty of water and the quantity required to mature a wheat crop. Two fields

were selected for the purpose on the Left Bank Canal containing Bansi wheat crops. The results are tabulated below :—

Survey No.	Crop.	No. of waterings.	Quantity of water used per acre.	Duty calculated to a base of 4 months (128 days).	Remarks.
			Cub. ft.	Rs.	A. g.
$\frac{137}{5}$	Wheat	4	91,704	205.70	1 31
$\frac{81}{1 \text{ and } 2}$	Wheat	4	62,725	203.31	1 8

(16).—PARSUL TANK.

The tank is situated in the Násik District on the Parsul River about two miles above the village of Umrána, which is on the Bombay and Agra road, 15 miles south-west of Málegaon. It is proposed to irrigate the lands of Umrána, Soundána and Nándgaon. The area under command is approximately 2,593 acres gross and 2,386 acres irrigable.

2. The closure of the Parsul Tank was accomplished in June 1889, and with the exception of the waste weir, which is nearly finished, and distributaries, which are not yet sanctioned, the work is complete. The work has been under construction since February 1883.

3. The rainfall during the year was 13.32 inches against 22.93 inches the average of past seven years. It was distributed as under during the monsoon months :—

	Inches.
June	0.27
July	3.36
August	0.56
September... ..	4.37

4. The following details show the intensity of rainfall :—

Number of days on which 2 inches or upwards of rain fell	...	Nil.
Number of days on which 1 inch and upwards of rain fell	...	2
Greatest fall in 7 days	...	3.43
Greatest fall in 1 day in inches	...	1.46
Mean daily intensity	...	0.25
Total fall from June to October	...	12.99

5. The tank had its first replenishment on the 15th of July 1889, and by the 23rd of that month the height of water rose to 14.40 feet above the outlet sill, equal to the storage of 24.8 millions cubic feet. The highest storage in the tank was 55.77 millions cubic feet, against 118.70 millions cubic feet of full storage above outlet sill.

6. The scarcity of rainfall (apparent from the foregoing details) brought in pressing demands for water from the villages of Umrána and Soundána. The monsoon crops would have failed entirely had water not been given to them from the tank. As the scale of water rates was not settled, the people agreed to pay whatever rates might be fixed hereafter. The following areas of crops in each village were watered :—

Crops.		Umrána.	Soundána.
		Acres.	Acres.
Bájrí	...	51	130
Maize	...	4	...
Chillies	...	...	4
Sesam	...	...	1
Total		55	135
Total Kharif Irrigation		...	190

In the rabi season the rainfall was 4.43 inches in October, but owing to scanty monsoon rainfall the moisture in the ground was not sufficient to grow rabi crops independently of irrigation, and demands for water from the tank were also received in the rabi season. Water was granted under the same conditions as for the kharif season to areas, as under:—

				Acres.
Umrāna	...	...	...	55
Soundāna	...	...	...	69
Total				124

7. As it has not yet been decided what rate for water from Parsul Tank is to be levied, there have been no assessments on this account. A small revenue of Rs. 15 was realized on account of the sale of right for the cultivation of land taken up for the tank, &c.

8. No expenditure was incurred on the revenue management of the tank, as the establishment employed on the construction of the waste-weir work debitable to the Capital cost of the work looked after the irrigation.

9. The following figures show the evaporation and absorption during the year, after deducting for leakage gauged:—

	Feet.
Kharif season—from April to September (38 days) ...	0.45
Rabi season—from October to January (103 days) ...	3.39
Hot season—February and March (59 days) ...	0.58
Average daily evaporation and absorption, per day...	0.0221
Total evaporation and absorption for 6 months from October to March 1890 = 3.97 feet, or 7.94 inches per month.	

(17).—PRAVARA RIVER WORKS—OJHAR CANAL.

1. The area irrigated during the year was 4,561 acres, of which 2,246 acres were kharif and 2,315 acres were rabi crops. The total shows an increase of 637 acres over the area of the last year. 16 miles only of the canal were kept in operation, and this increase in area, notwithstanding the reduction in mileage in operation, may be taken as due to the appreciation of the canal water by the rayats, and to the energy of the irrigation subordinate in making arrangements and promptly investigating complaints.

Comparison of area applied for and irrigated.

2. The following statement compares the area applied for and irrigated during the year:—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1889-90 ...	2,852	2,246	2,887	2,315	5,739	4,561	606	572	1,178

The decrease in the area irrigated as compared with that for which water was applied for, is due to the seasonable and favourable rain in September and October 1889, which probably induced the cultivators not to resort to canal water previously applied for.

The area applied for, but not irrigated, is 26 per cent. of the area irrigated, which is objectionable.

3. During the year under review the water-rate assessment amounted to Rs. 8,937, detailed as follows:—

				Rs.
Water-rate assessment.	Kharif	...	...	4,218
	Rabi	...	...	4,719
				<u>8,937</u>

The total amount of assessment in the last year was Rs. 6,320; there is, therefore, an increase of Rs. 2,617, or 41 per cent.

4. The average incidence of water rate per acre was Rs. 1·96 as compared with Rs. 1·61 in 1888-89.

5. The Capital expenditure during the year amounted to Rs. 2,008, and it was incurred in completing an overbridge and escape unfinished at the end of the last year, and in constructing 2 regulators, and an overbridge with a regulator for Loni-Hasnápúr road. The overbridge was not completed. A survey was undertaken for improving the canal in connection with the improved supply expected from the proposed Sámrad Tank.

6. The working expenses of the year amounted to Rs. 5,977 in all, as follows:—

				Rs.
Working expenses.	Maintenance and repairs	...	...	3,345
	Share of establishment	...	...	1,930
	Tools and plant	...	...	41
	Share of collection charges	...	...	391
	Indirect charges	...	...	270
			Total	<u>5,977</u>

The working expenses of the last year amounted to Rs. 5,761. There is an increase of Rs. 216 on the whole. The increase in maintenance and repairs, Rs. 244, is due to the special and ordinary repairs executed to the canal buildings, which cost about Rs. 623. Thus the maintenance charges may be taken at Rs. 2,722, which includes the cost of revenue management, *i. e.*, the pay of canal kárkúns, chaukidárs and pátkaris who distribute water for irrigation, &c.

7. The old water rates were enforced since the commencement of the year.

8. The cost of measurement during the year amounted to Re. 0-1-6 per acre irrigated.

9. The duty of water per cubic foot per second varied, on the average, from 12 to 149 acres in the hot weather, from 40 to 140 acres in the monsoon, and from 105 to 125 acres in the rabi season.

10. The rainfall during the year as gauged at A'shwi was 18·99 inches, or 7·67 inches less than the average during the last five years.

11. The river supply was abundant during the monsoon and early cold weather; it began to diminish about the middle of January, when an earthen dam, 2 feet high, had to be constructed, as usual, on top of the weir at Ojhar, to increase the storage of water for the hot weather.

The irrigators below the 16th mile of the canal seem to have realized the loss they suffer owing to the water not passing down to them; and as the demands for water in the lower portion have frequently been urged, the entire length of the canal will be kept open during 1890-91.

12. At the end of the year, the number of trees on this canal was 11,987. The numbers of principal kinds were—

Bábhul ...	8,968	Mango ...	880
Nimb ...	1,609	Jámbul ...	234

The total number last year was 12,338. The decrease is chiefly due to the cutting of bábbul and sawandad tree whose shade was becoming injurious to the growth of neighbouring mango and other valuable trees. Some of the wood was sold by public auction, and a part used for burning lime for the works, the value being adjusted. *

13. The work has been in operation for the past thirteen years, and the year under report is chiefly remarkable for the area irrigated being the largest on record, although only a portion of the whole length, and distributaries, were in full operation. The work now promises well, but its prosperity depends upon an assured perennial supply, which cannot be expected until the storage work is made.

(18).—BHÁTODI TANK.

1. The area irrigated during the year was 1,307 acres, of which 82 acres were kharif and 1,225 acres were rabi crops. The total shows a decrease of 413 acres on the area of the last year. The decrease in the kharif season was 725 acres, which was reduced by an increase of 312 acres in the rabi. The decrease was due to the want of water in the tank until the end of August 1889.

Comparison of area applied for and irrigated.

2. The following statement compares the area applied for and irrigated during the year:—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE MORE IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1889-90 ...	73	82	1,194	1,225	1,267	1,307	9	31	40

The area irrigated exceeded that applied for. The excess is trifling, only 3 per cent. of the area irrigated, but shows that it would be no hardship to insist on a minimum payment for at least the area applied for.

Water-rate assessment.

3. The water-rate assessment during the year amounted to Rs. 3,798, detailed as below:—

Kharif	...	...	Rs. 846
Rabi	...	...	„ 2,952
			<u>3,798</u>

The total amount of the assessment in the last year was Rs. 3,652. The increase is Rs. 146, or 4 per cent., which is due to the old rates having been resumed.

4. The incidence of the water-rate per acre was Rs. 2.90 against Rs. 2.12 in the previous year. This is also due to the higher water-rates.

Capital account.

5. The Capital account of this work is practically closed.

Working expenses.

6. The working expenses of the year amounted to Rs. 2,776, detailed as below:—

	Rs.
Maintenance and repairs ...	1,554
Share of establishment ...	928
Tools and plant ...	50
Share of collection charges ..	114
Indirect charges ...	180
Total ...	<u>2,776</u>

The rate for maintenance and repairs per mile of canal opened is Rs. 617 and per acre irrigated is Rs. 2.12.

Water-rates.

7. The old water-rates were in force since the commencement of the year.

8. Permanent water-rates were assessed during the revised survey on the fields of some of the villages irrigated by the tail and leakage water of the tank. A portion of these ought to

be credited to the Irrigation Department; and the question is under reference.

Cost of measurement.

9. The cost of crop measurement amounted to Re. 0-3-0 per acre irrigated.

10. The duty of water per cubic foot per second varied on the average from 32 acres to 49 acres in the hot weather, from 34 acres to 261 acres in the monsoon, and from 125 acres to 154 acres in the rabi season.

11. The rainfall during the year as gauged at Bhátodi was 19.63 inches or 8.17 inches less than the average during the last five years.

Rainfall.

12. The water-supply of the tank was not abundant. On the 1st April 1889 the water stood at 11.52 feet above the sill of outlet sluice, i. e., at R. L. 81.52 against R. L. 90.07 on 1st April 1888. On the 1st June it had fallen to R. L. 74.20. With a small replenishment on the 11th June, the level rose to R. L. 78.50; the tank water then decreased gradually to a minimum of R. L. 73.25 on the 4th September. The minimum water level in 1888 was R. L. 82.66 on the 23rd September. The highest water level during the year was R. L. 95.50 on the 13th September, which dwindled down to R. L. 85.06 on the 31st March, leaving the water 3½ feet higher than at the commencement of the year. Observations of floods were not taken.

Water-supply.

The cultivators take every advantage of the available supply; and had the capacity of the tank been greater, the irrigation on it would also have been larger. In order to increase the storage in the cold and hot weather seasons, a temporary dam, 3 feet high, was built along the waste-weir crest.

13. At the end of the year the number of trees on the canal and tank margin amounted to 6,613. The numbers of the principal kinds were—

Plantations.

Bábhul ...	4,151	Nimb ...	417
Mango ...	1,413	Jámbul ...	90

• The total number last year was 6,680.

(19).—MÁTOBA TANK.

The water in the Mátoba Tank, which is filled by the surplus water from the Mutha Canal, stood at the opening of the year, 1st April 1889, at 17.87 feet above the sill of the outlet. The water level then fell continuously until 16th July, when it was at the lowest level for the year, or 5.60 feet above the sill. From this date the water began to rise, and the tank filled on the 20th September, and the maximum level was reached on 19th October, when the water stood at 29.40 feet above the sill of the sluice. At the close of the year it fell to 19.09 feet, or 1.12 feet higher than the level of the previous year.

2. The areas irrigated from this tank during the year were 2,177 acres, of which 1,094 acres were kharif and 1,083 acres rabi. The total shows an increase of 312 acres on the area of the previous year (or 17 per cent.) due to want of seasonable rainfall and ordinary extension of irrigation. There was an increase in the total assessment of water-rates, which amounted to Rs. 9,145 as compared with Rs. 8,151 in the previous year. The incidence of the water-rates was

Areas irrigated and assessment.

Rs. 4.20 per acre irrigated against Rs. 4.37 in the previous year, due to the increase in the area of the low-rated crops. The miscellaneous revenue amounted to Rs. 135, making a total revenue of Rs. 9,280.

3. The areas irrigated were ascertained by actual measurements, the greater part being made by measurers specially entered for the purpose, and the remainder by a sub-overseer and inspectors when time could be spared from their ordinary work. The cost of measurements was thus reduced to 4 pies per acre as compared with 11 pies in the previous year.

4. The working expenses amounted to Rs. 2,396, which represents a rate per mile of canal in operation of Rs. 140.94, or Rs. 1.10 per acre irrigated.

5. The highest duty of water obtained during the dry season was that for the month of January, when the area irrigated was 1,399 acres and the average discharge 8.84 cubic feet per second, giving a duty of 158.80 acres per cubic foot per second. The lowest duty in the dry season was in May, when the area irrigated was 399 acres and the average discharge 6.62 cubic feet per second, giving a duty of 60.37 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for the rainy season, the canals being single-banked.

6. The following is the comparison of areas irrigated and applied for :—

Areas applied for			Areas irrigated.			More.		Less.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.	Acres.	
2,119	737	2,856	1,094	1,083	2,177	...	343	1,025	...

Less quantity irrigated in kharif is due partly to copious rain after receipt of applications rendering canal water unnecessary. Some of these crops consequently took water in the rabi season, and hence the excess for that season.

7. The number of trees on this tank was 15,067, the principal trees being bābhul, 14,868 in number.

(20).—KASURDI TANK.

This tank was empty on 1st April, and remained so till 2nd June, when it was replenished, after which it again gradually fell to the level of the sill and remained empty till 10th September, when it was again replenished, filling on the 6th October. The storage was drawn upon from the 10th November, and the water level fell to the level of the sill on 16th March 1890.

2. The areas irrigated were 53 acres of kharif and 192 acres of rabi crops; the total shows an increase of 101 acres on the area of the previous year (or 70 per cent.). The increase was due to more water having collected in the tank during the rains than is usual. During the hot season, when there was no water in the tank, the bed of the tank was utilized for the cultivation of melons, and Rs. 103 were obtained as rent.

3. The assessment amounted to Rs. 635, of which Rs. 510 were on account of water-rates and Rs. 125 for miscellaneous revenue. This shows an increase of Rs. 245 on the total assessment of the previous year.

4. The areas irrigated were ascertained by actual measurements by measurers specially entertained for the purpose, and from 9 to 12 per cent. were checked by the subordinate in charge. The cost of the measurements amounted to Rs. 14, or at the rate of 11 pies per acre.

5. The following is the comparison of areas irrigated and applied for :—

Area applied for			Area irrigated.			DIFFERENCE.			
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	More.		Less.	
						Kharif.	Rabi.	Kharif.	Rabi.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.	Acres.	
57	166	223	53	192	245	...	26	4	...

The differences call for no special remarks.

6. There were 1,063 trees on this tank, of which 1,051 were bābhul. *

(21).—SHIRSUPHAL TANK.

At the commencement of the year the water in the Shirsuphal Tank stood at 18'00 feet above the sill of the outlet sluice,—that is, 7'54 feet lower than at the corresponding period of the previous year.

The tank received its first replenishment on 5th September and then gradually filled and flowed over the waste weir on the 18th October 1889.

The maximum height above the sill of outlet was 31'60 on the 19th October. At the close of the year the water level was 25'30 above outlet sill, or 7'21 feet higher than on the corresponding date of the previous year.

2. The areas irrigated were 643 acres of kharif and 659 acres of rabi crops ; or a total of 1,302 against 1,753 acres in the previous year. The decrease is due to the fact that in 1889 there was an extraordinary increase, chiefly due to want of seasonable rainfall, of 982 acres. The acreage for 1889-90 is an increase, therefore, of 531 acres above the year 1887-88 due to ordinary extension of irrigation and want of seasonable rainfall.

3. The assessment amounted to Rs. 3,487, of which Rs. 3,190 were on account of water-rates and Rs. 297 for miscellaneous revenue. This shows an increase of Rs. 555 on the total assessment of the previous year. The average incidence per acre for the year was Rs. 2'45 against Rs. 1'63 in the previous year, due partly to increase in the high-rated crops, but principally to the higher rates referred to in paragraph 8 following.

4. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an inspector when time could be spared from his ordinary work ; the cost of measurements was thus reduced to 5 pies per acre.

5. The working expenses amounted to Rs. 2,565, which represents a rate for maintenance per mile of canal in operation of Rs. 205 and Rs. 1'97 per acre irrigated.

6. The highest duty of water obtained during the dry season was for the month of January, when the area irrigated was 814 acres and the average discharge 5'96 cubic feet per second, giving a duty of 136'59 acres per cubic foot per second. The lowest duty in the dry season was in May, when the area irrigated was 137 acres and the average discharge 3'34 cubic feet per second, giving a duty of 41'11 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation

at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for the rainy season, the canals being single-banked.

7. The following is the comparison of areas irrigated and applied for :—

AREAS APPLIED FOR			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
1,105	511	1,616	643	659	1,302	...	148	462	...

Less quantity irrigated in kharif is due partly to copious rain after receipt of applications rendering canal water unnecessary. Some of these crops subsequently took water in the rabi season : hence the excess for that season.

8. Water-rates charged during the year are those sanctioned in Government Resolution No. 47A.L.—601 of 28th March 1889. Some of the water applications for perennial crops had been sanctioned at old rates before the receipt of the Government Resolution.

9. The number of trees on this tank was 10,016, of which 8,640 were bábhul and the rest miscellaneous trees.

(22).—BHA'DALVA'DI TANK.

1. At the commencement of the year the water in the tank stood at 27·14 feet above the outlet sluice,—that is, 0·69 feet lower than at the corresponding period of the previous year. There was a good replenishment in the middle of July and again on the 11th September. On the latter date the water level was 17·17 feet above the outlet sluice, and it continued to rise until it reached its maximum for the year on the 19th October 1889, when it was 36·00 feet above the sill of the outlet, the tank having filled on the 18th; it then gradually fell, and at the close of the year was 26·79 feet, or 0·43 lower than on the corresponding date of the previous year.

2. The areas irrigated were 525 acres of kharif and 460 acres of rabi, making a total of 985 acres, against 710 acres in the previous year. The increase was due to want of seasonable rainfall and ordinary extension of irrigation. The assessments of water-rates amounted to Rs. 3,826 and miscellaneous revenue to Rs. 135, making a total of Rs. 3,961, against Rs. 2,686 in the previous year. The increase is partly due to natural increase, partly to enhanced rates sanctioned in Government Resolution No. 49 A. L.—601 of 28th March 1889 being charged on part of the crops, and partly to want of seasonable rainfall in the rabi season.

3. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an inspector when time could be spared from his ordinary work. The cost of measurements was thus reduced to 8 pies per acre.

4. The working expenses amounted to Rs. 2,239, which represents a rate per acre irrigated of Rs. 2·27. This rate, though still somewhat high, compares very favourably with that of former years, owing to reduction of expenses and increase in area irrigated.

5. The highest duty of water obtained during the year was that for the month of September, when the area irrigated was 503 acres and the average discharge was 2·14 cubic feet per second, giving a duty of 235·10 acres per cubic foot per second. The lowest duty in the year was in March, when the area irrigated was 364 acres and the average discharge 5·00 cubic feet per second, giving a duty of 72·92 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

6. The following is the comparison of areas irrigated and applied for :—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
559	301	860	525	460	985	...	159	34	...

The differences do not call for special remarks.

7. Water-rates charged during the year were those sanctioned in Government Resolution No. 47 W.I.—601 of 28th March 1889. Some of the water applications for perennial crops had been sanctioned before the receipt of the Government Resolution at old rates.

8. The total number of trees at the end of the year was 8,018, the principal trees being 6,841 bábhuł and 777 bámbú.

(23).—KOREGAON TANK.

1. The rainfall gauged at Koregaon during the year was 36·80 inches, of which that gauged from June to October was 36·33 inches; during the same period of the previous year 18·09 inches of rainfall was recorded, but it brought no water to the tank, whereas this year the tank was full, and the waste weir kept flowing for about 1½ months; the highest flood noted was 1·50 feet.

2. The total area irrigated was 336 agnst 230 acres in the previous year as below :—

					Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	...	...	...	151	79	230
1889-90	...	...	...	...	13	323	336

showing that the fall in rabi in one and kharif in another year is entirely due to want of water in the tank. The people of the villages under this tank use the water extensively, but they are not able to irrigate the whole land under command, as they cannot get sufficient manure.

3. On this tank the areas applied for and irrigated show no difference.

4. The assessment from all sources during the year amounted to Rs. 746, Of this only Rs. 3 were received from plantation and the rest from water-rates representing Rs. 2·2 per acre irrigated. This is low, owing to there being little irrigation under perennial crop.

5. The working expenses, including indirect charges, amounted to Rs. 895, which gives Rs. 2·66 per acre irrigated. The maintenance charges were Rs. 455 for 3½ miles of canal. These cannot be reduced, as the canal is, in fact, a catch-water drain, there being no proper cross drainage works, and requires to be attended to after every fall of rain.

6. The irrigated area was measured by the canal kárkún and a khalásj under him, and checked by the subordinate in charge. The cost on this account is Rs. 30, giving Re. 0·1·5 per acre irrigated.

7. There was no receipt from plantation during the year, except Rs. 3, as above stated. The trees above and below 5 feet are 859 and 401 respectively.

8. The following gives the storage lost in evaporation and absorption during the year :—

		Cubic feet.
Quantity in tank for use during the year	...	172,883,406
Deduct—		
Quantity discharged and overflowed the weir	104,812,704	
Do. in tank on 31st March 1890	62,623,800	
		167,436,504

Quantity lost by evaporation, &c.=depth of water in tank. 5,446,902

This is low for the area of the tank, for the reason that the tank was dry till July.

(24).—ASHTI TANK.

1. The rainfall gauged during the year was 30·42 against 20·80 inches in the previous year. The water in the tank reached the full supply level in October, and the cut in the waste-weir channel kept flowing for 9 days.

2. The area irrigated during the year was 1,447 acres, of which 829 were kharif and 618 rabi. Compared with the figures of the last year there was a decrease of 819 acres in rabi and 151 acres in kharif. The decrease is chiefly due to favourable rainfall in both seasons. To attempt to grow perennial crops in small villages away from large towns involves great cost in procuring manure and good labour; this and the increased water-rates have for the present reduced the perennial crop by 41 acres.

(a) The land under command of this tank being sub-divided into small irrigation numbers, there was no increase or decrease in irrigation over water applications.

3. The water-rates amounted to Rs. 4,524 against Rs. 4,598 in the previous year. It may be remarked that though the difference in irrigation of the two years is 970 acres, yet the revenue is nearly the same, owing to the increased water rates.

(a) The gross assessments from all sources were Rs. 5,069 against Rs. 4,990 in the last year; of this, Rs. 399 were received from plantation, including grazing. The incidence of water-rates is Rs. 3·13 per acre irrigated.

4. The babhul plantations on the canals, contour, and behind the dam are all in a promising state. During the year the grown-up trees were put to sale, with a view to thin them without incurring any extra charge and to enable the younger ones to flourish; but the amount offered was much less than was anticipated, owing to the great distance of the commercial towns from Yeoti, and the sale had to be cancelled. The trees on the canals were trimmed, and the loppings were sold to cultivators for fencing. The aloe fencing on the canal and tank boundaries yielded Rs. 165 this year. The expenditure on plantations was Rs. 292. The number of large trees of all kinds was 18,315 and of those below 5 feet was 31,295; there are also a number of smaller trees not included in the above figures.

5. The working expenses of the year, including all direct and indirect charges, were Rs. 5,774. The collection charges were Rs. 207; the maintenance charges Rs. 3,195, representing Rs. 116 per mile, which is necessary to keep the canals in efficient working order. As the present irrigation on the canals is only a small portion of what has been provided for in the original project, the water admitted into the canal is proportionately small, and the current being slow, weeds grow abundantly and require to be removed almost every second month; this increases the cost of maintenance.

6. The land under command having been sub-divided into small suitable irrigation numbers, the subordinate in charge prepares the assessment papers by merely inspecting the irrigated numbers, and thus no extra amount was incurred on this account.

7. Gauge observations made during the year for determining the duty of a cubic foot of water per second gives the following result:—

<i>Perennial Crop.</i>		
Sugarcane.	Plantain.	Average.
54 acres.	77 acres.	65½.
<i>8-monthly Crop.</i>		
Ground-nut.	Chilly.	
164 acres.	190 acres.	177.
<i>4-monthly Crop.</i>		
Inferior Rice.	Jod Wheat.	
154 acres.	139 acres.	146½.

The duty for 8-monthly crops seems large, for the reason that no watering was required in September and October owing to favourable rainfall; and it is found that 256 millions cubic feet of water were required to mature the crops on 1,447 acres irrigated, or 176,918 cubic feet of water were required on an average to irrigate an acre.

8. The following shows the storage lost in evaporation, absorption, &c., during the year:—

	Cubic feet.
Quantity of water for use in tank during the year	1,630,793,688
<i>Deduct—</i>	
Quantity discharged through the canals and leakage, &c.	445,568,256
Quantity in tank on 31st March 1890	789,202,617
	1,234,770,873
Quantity lost by evaporation, absorption, &c., during the year = 7·08 feet depth of water in tank on mean area	396,022,815

(25).—REVÁRI CANAL.

1. Early in the year under report, temporary arrangements were made by which this canal was extended for a length of $1\frac{2}{3}$ miles, bringing under command an additional area of about 500 acres. Towards the end of the year, sanction was received to make these works permanent at a Capital cost of Rs. 1,350.

2. The rainfall of the year, as compared with that of 1888-89, was as follows:—

	Inches.
1888-89	29·41
1889-90	40·06

The average for the previous ten years being 33·01.

3. The area irrigated compared with the year previous was —

	Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89... ..	225	775	1,000
1889-90... ..	192	1,033	1,225

Of the land under command, 34 per cent. was irrigated, and this area is $22\frac{1}{2}$ in excess of that irrigated in 1888-89, while the area irrigated was 14 per cent. in excess of that applied for.

4. The assessments, excluding remissions, are as follows:—

	Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	2,143	1,763	3,906
1889-90	1,390	3,267	4,657

Remissions to the extent of Rs. 31 were granted for rabi; revenue from other sources realized Rs. 89, bringing the total gross revenue to Rs. 4,715.

5. The average water-rate was Rs. 3·8 compared with Rs. 3·89 for the year previous.

6. The cost of measurement was Rs. 206, or 2 annas and 8 pies per acre, against 8 pies per acre measured last year. The difference is due to the khalásis pay this year being charged to measurement, instead of to maintenance.

7. The working expenses, including direct and indirect charges, are as follows:—

	Rs.
1888-89	1,976
1889-90	2,476

which is an increase of 25 per cent over the last year, and is 52 per cent. on the gross revenue. The rate per mile of canal open was Rs. 495, against Rs. 395 the year before. The rate per acre irrigated being Rs. 2·02 for this year as compared with Rs. 1·97 the previous year.

8. The average duty per cubic foot per second was for the kharif 52 acres and for the rabi 153 acres.

(26).—UPPER MÁN RIVER WORKS.

1. The Lodhowde weir and channel works were completed during the year at a Capital expenditure of Rs. 5,249, but not, however, in time to be of practical use.

2. The rainfall of the year, as compared with that for 1888-89, was—

				Inches.
1888-89	...	...	...	21·75
1889-90	...	...	...	27·04

The average for the previous ten years being 21·29.

3. The area irrigated was for the two years as follows :—

		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
1888-89	...	746	634	1,380
1889-90	...	743	688	1,431

24 per cent. of the area under command has been irrigated ; this is 3·6 per cent. increase over that of the previous year.

The area irrigated was 16 per cent. in excess of that applied for.

4. The assessments were as follows :—

		Kharif.	Rabi.	Total.
		Rs.	Rs.	Rs.
1888-89	...	3,124	1,707	4,831
1889-90	...	3,945	2,470	6,415

No remissions had to be granted.

In addition to this, Rs. 180 were obtained from other sources, bringing the gross revenue up to Rs. 6,595.

5. The average water-rate was Rs. 4·5 per acre, against Rs. 3·5 per acre the year before, and is probably due to enhancement of rates introduced during the year.

6. The cost of measurement was Rs. 210, equal to 2 annas and 4 pies per acre measured.

7. The working expenses, including all direct and indirect charges, were as follows :—

			Rs.
1888-89	...	...	4,971
1889-90	...	...	3,600

which shows a decrease of over 27 per cent., and is 54 per cent. of the gross revenue. The cost per mile of canal open is Rs. 190, against Rs. 261 the year before, and the cost per acre irrigated is Rs. 2·52 as compared with Rs. 3·60 the previous year.

8. The duty per cubic foot per second of discharge was for the kharif 117 acres and for the rabi 78 acres.

(27).—YERLA CANALS.

1. Only a few minor works were carried out against the Capital Account amounting in all to Rs. 539.

A proposal has been made for the extension of the Yerla Right Bank Canal for a length of about 4½ miles, the annual revenue expected being Rs. 2,675. The proposal has been referred to the Revenue officers for opinion.

2. The rainfall of the year compared with that for 1888-89 was—

				Inches.
1888-89	...	...	...	29·25
1889-90	...	...	...	40·51

The average for the ten previous years was 31·57.

3. The area irrigated was as follows :—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	691	972	1,663
1889-90	...	774	1,150	1,924

The area irrigated, compared with that under command, is 18 per cent., and is over 15 per cent. in excess of the area irrigated the year before.

The area irrigated was 19 per cent. in excess of that applied for.

4. The assessments for the two years are as follows :—

		Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	3,871	2,573	6,444
1889-90	...	4,716	3,511	8,227

No remissions had to be given.

In addition, Rs. 626 were realized from other sources, bringing the total gross revenue to Rs. 8,853.

5. The average water-rate was Rs. 4·3 per acre as compared with Rs. 3·87 per acre the year before, the increase was due to the enhanced water-rates.

6. The working expenses, including all direct and indirect charges, were as follows :—

				Rs.
1888-89	...	...	...	6,405
1889-90	...	...	...	5,913

which shows a decrease of 7·6 per cent., and is 67 per cent. of the gross revenue.

The rate per mile of canal open was Rs. 185, against Rs. 200 the year before, and the cost per acre irrigated was Rs. 3·07 per acre as compared with Rs. 3·85 the year previous.

7. The duty per cubic foot of discharge per second was for kharif 63 acres and for rabi 65 acres.

(28).—CHIKHLI CANAL.

1. There was no expenditure on Capital Account during the year.
2. The rainfall was, compared with 1888-89, as follows :—

				Inches.
1888-89	...	...	...	23·54
1889-90	...	...	...	37·07

The average for ten years previous being 26·07 inches.

3. The area irrigated was as follows :—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	331	77	408
1889-90	...	312	101	413

The area irrigated was 28 per cent. of that under command, and was practically the same as that for which applications were received.

4. The assessments were as follows :—

		Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	1,226	201	1,426
1889-90	...	1,198	334	1,532

No remissions had to be given. Rs. 38 were realized from other sources, bringing the gross revenue up to Rs. 1,570.

5. The average water-rate was Rs. 3·7 per acre as compared with Rs. 3·5 the previous year.

The cost of measurement was Rs. 36, equal to 1 anna 4 pies per acre measured.

6. The working expenses, including all charges, were as follows :—

				Rs.
1888-89	...	...	...	975
1889-90	...	...	...	1,602

which shows an increase of over 64 per cent., and is 102 per cent. of the gross revenue.

The cost per mile of canal open is Rs. 246, against Rs. 150 the year before, and the cost per acre irrigated is Rs. 3·88 as compared with Rs. 2·39 for 1888-89.

7. The duty per cubic foot of discharge per second was for the kharif 217 and for the rabi 13 acres.

(29).—MAINI TANK CANAL.

1. As mentioned in the Administration Report, an estimated additional Capital expenditure of Rs. 28,660 is rendered necessary to make this work safe, as from the experience of a heavy flood, which occurred in October 1889, it was found the waste-weir provision was insufficient. During the year Rs. 1,719 was expended on this account.

2. The rainfall, as compared with the previous year, was—

				Inches.
1888-89	...	...	...	19·17
1889-90	...	...	...	41·43

the average for the past ten years being 24·58 inches.

3. The area irrigated was as follows :—

			Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	...	1,306	581	1,887
1889-90	...	...	1,326	449	1,775

The area irrigated was 33 per cent. of the irrigable area, but was about 6 per cent. less than that irrigated the year before, which was due to the very favourable rainfall. The measured area was 4 per cent. in excess of that applied for.

4. The assessments were :—

			Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	...	4,526	1,524	6,050
1889-90	...	...	5,904	1,614	7,518

No remissions had to be given. Though the area irrigated has decreased by 6 per cent., the assessments have increased by 24 per cent., and is entirely due to the enhanced rates introduced this year. From other sources a sum of Rs. 274 was realized, bringing the total gross revenue up to Rs. 7,792.

5. The average water-rate was Rs. 4·2 per acre against Rs. 3·21 of the previous year.

6. The cost of measurement was Rs. 247, equal to 2 annas and 3 pies per acre measured.

7. The working expenses were—

				Rs.
1888-89	...	...	...	3,561
1889-90	...	...	...	4,890

which shows an increase of over 37 per cent., and is 63 per cent. of the gross revenue. The increase is principally due to the extensive silt clearance caused by the unusually heavy floods. The cost per mile was Rs. 288 as compared with Rs. 279 the previous year, and the cost per acre irrigated was Rs. 2·75 as against Rs. 1·89 in 1888-89.

44 (30).—MUCHKUNDI TANK; (32).—GA'DIKERI TANK; (33).—DAMBAL TANK.

8. The duty per cubic foot of discharge per second was for the kharif 235 acres and for the rabi 34 acres.

(30).—MUCHKUNDI TANK.

1. The rainfall was, as compared with that for 1888-89, as follows:—

				Inches.
1888-89	...	...	...	22.62
1889-90	...	...	...	21.73

2. Area irrigated was—

				Perennial Acres.
1888-89	...	...	...	2
1889-90	...	...	...	2

3. The assessments were—

				Rs.
1888-89	...	...	...	19
1889-90	...	...	...	19

Miscellaneous revenue produced Rs. 161, making the total gross revenue Rs. 180.

4. From observations of the water level in the tank from month to month it would appear that all leakage has now ceased, and that the only loss is that due to evaporation. If arrangements could be made for the irrigation of the inam lands, the revenue would increase considerably.

(32).—GA'DIKERI TANK.

1. The management of this tank is under the control of the Revenue Department.

2. There has been no expenditure during the year.

3. A sum of Rs. 172-3 was refunded on account of excess crop-rates previously incorrectly assessed and collected by the Revenue Department on lands which pay enhanced consolidated water-rates.

4. The area irrigated by this tank was 337 acres, and the consolidated revenue amounted to Rs. 2,658, of which Rs. 2,127 was irrigation share and Rs. 531 land share.

(33).—DAMBAL TANK.

- The rainfall compared with that of 1888-89 was as follows:—

				Inches.
1888-89	...	...	...	21.06
1889-90	...	...	...	21.37

The average for ten years previous being 19.99.

2. The tank filled in September and remained full till the middle of November; at the end of March its level was still only 5 feet below full-supply level.

3. The "new" area irrigated was as follows:—

			Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	...	130	88	218
1889-90	...	...	83	69	152

The area irrigated was only 3.3 per cent. of that which is irrigable, and is 30 per cent. less than that of the previous year, the decrease in the kharif area being due to the late period at which the tank filled, and that of the rabi to favourable late rains. The area irrigated and that applied for was practically the same.

4. The assessments, excluding remissions, were as below :—

				Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	...	...	703	279	982
1889-90	...	...	...	529	337	866

This is a decrease of 12 per cent. Remissions had to be granted to the extent of Rs. 260 for kharif owing to the failure in the supply to gardens. Miscellaneous revenue realized Rs. 523, while the increased assessment levied on the "old" irrigation and due to the improved supply was Rs. 666, making a total gross revenue of Rs. 1,795 as compared with Rs. 1,983 the year before.

5. The average water-rate was Rs. 5·7 per acre as against Rs 4·5 the year before.

6. The working expenses, including all charges, were as follows :—

					Rs.
1888-89	...	...	...	...	530
1889-90	...	...	...	...	553

which is an increase of a little over 4 per cent. and is 31 per cent. on the gross revenue.

- *7. The average duty of the channels in the kharif and rabi seasons, taking the "old" area into consideration, was 95 and 58 acres per cubic foot per second respectively.

(34).—MEDLERI TANK.

1. The rainfall compared with 1888-89 was as follows :—

					Inches.
1888-89	...	...	...	...	27·25
1889-90	...	...	...	...	28·72

the average for the twelve past years being 22·68 inches.

2. There was no scarcity of water in the year under review. The tank was replenished by storms in April and May, and during June, July and August, there was never less than 9 feet in depth over the sill of outlet; in September it filled to overflowing, and at the end of March there was still 8 feet in depth available.

3. The area irrigated was as follows :—

				Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	...	...	111	4	115
1889-90	...	...	...	95	9	104

and was 10 per cent. of the irrigable area, and is about 10 per cent. less than the previous year. The area irrigated and that applied for was practically the same.

4. The assessments were as below :—

				Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	...	...	766	19	785
1889-90	...	...	...	426	31	457

which shows a decrease of 42 per cent. No remissions had to be given.

5. The average water-rate was Rs. 4·4 per acre as compared with Rs. 6·8 the year before.

6. The working expenses, including all charges, were—

					Rs.
1888-89	...	...	...	...	1,730
1889-90	...	...	...	...	988

which shows a decrease of 43 per cent. nearly, and is 216 per cent. on the gross revenue.

7. The duty per cubic foot per second was for kharif 82 acres and for rabi 12 acres, and include the "old" area irrigated.

(35).—MADAG TANK CANALS.

1. The rainfall was 33·82 inches, against 33·22 inches the year before, the average for twenty years being 29·92 inches.

2. The area irrigated was as follows:—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89 ...	...	354	284	638
1889-90 ...	...	390	261	651

and is 37·6 per cent. of the irrigable area, the increase in irrigated area being about 2 per cent. over that of the previous year.

3. The assessments were—

		Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89 ...	...	978	881	1,859
1889-90 ...	...	1,126	753	1,879

No remissions had to be granted. An additional sum of Rs. 157 was realized for grass, the total gross revenue amounting to Rs. 2,036. The increase in revenue during the last two years is due to the enhanced rates.

4. The average water-rate was nearly Rs. 3 per acre, the same as last year.

5. The working expenses, including all charges, were—

				Rs.
1888-89 ...	...	...	...	1,412
1889-90 ...	...	...	...	1,997

The increase is over 41 per cent. on that of the year before and is 98 per cent. on gross revenue. The increase is principally due to a sum of Rs. 703 having been spent on puddling the bed of the Left Bank Canal.

6. The principal crop acreages were rice 306, garlic 192, sweet potatoes 57, sugarcane 41, and onions 13.

7. The total number of trees on the canal is 8,448, and consist chiefly of mango, bábhul, nimb, sandal, and tamarind.

8. The measured loss by leakage and evaporation was 16 and 42 cubic feet per mile on the Right and Left Bank Canal, respectively. The duty per cubic foot per second was 68 and 24 acres for the kharif and rabi respectively, including "old" irrigation.

9. Petitions continue to be received for the extension of the canals, but this is not advisable, owing to insufficiency of supply.

(36).—ASUNDI TANK.

1. The rainfall gauged at Ránebehnur, 6 miles away from the tank, was—

				Inches.
1888-89...	...	...	...	24·48
1889-90...	...	...	...	28·76

The average for twenty-two years being 22·99 inches.

2. From April to August inclusive the water was not less than 7 feet in depth over sill of outlet. In September the tank filled, and remained so all October, and by the end of March had only lowered 5 feet, leaving still 9 feet in depth available for irrigation.

3. Exclusive of "old" irrigation the areas irrigated were—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89 ...	...	86	27	113
1889-90 ...	...	49	26	75

and is only 4 per cent. of the irrigable area. The decrease in area irrigated is 33 per cent., and is partly due to favourable rainfall and partly to unpopularity of the tank water.

4. The assessments were :—

			Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	...	449	58	507
1889-90	...	...	167	64	231

The decrease is 54 per cent. No remissions had to be granted. A sum of Rs. 472 was realized from consolidated rates on "old" irrigation, making the gross revenue Rs. 703 as compared with Rs. 980 the year previous.

5. The average water-rate was Rs. 3·1 per acre, against Rs. 4·5 per acre in 1888-89.

6. The working expenses, including all charges, were—

					Rs.
1888-89	...	...	...	...	631
1889-90	...	...	...	...	685

This is an increase of 8½ per cent. on the expenses of the year before, and is upwards of 97 per cent. on the gross revenue.

7. The average duty of water in the kharif season was 34 acres and in the rabi was 13 acres, including the "old" irrigated area.

8. As yet the result of the enquiry by the Agricultural Department called for in Government Resolution No. 39 A. I.—535 of 14th March 1890, has not been reported.

(37).—MAVINKOP TANK.

The enhancement of the water-rates due to the improvements carried out on this tank in the famine still remains in abeyance, in deference to the opinions of the Revenue authorities. Consequently no return is obtained on the expenditure incurred. The tank is managed by the cultivators under the control of the Revenue Department.

(39).—GOKAK CANAL, 1ST SECTION.

1. Water applications were sanctioned only up to 15th February, excepting to crops whose supply could be supplemented from wells. The hot-weather supply, though better than the previous year, was still deficient, there being two periods, of a fortnight each, in which no water was admitted into the canal. No remissions, however, had to be given, owing to the period of sanctions being limited.

2. The rainfall, as gauged at the head of the canal, was, as compared with that of 1888-89, as follows :—

				Inches.
1888-89	...	...	...	20·16
1889-90	...	...	...	27·38

3. The area irrigated was—

			Kharif. Acres.	Rabi. Acres.	Total. Acres.
1888-89	...	...	2,338	1,499	3,837
1889-90	...	...	2,993	1,185	4,178

During the year under review, 25 per cent. of the irrigable area was irrigated, and is 9 per cent. in excess of that of the previous year. The increase in kharif is due to improved supervision and to increased facilities afforded in distribution, while the decrease in rabi is due to favourable late rains, the fall being 8·23 inches as against 4·44 the year previous. The area irrigated was 11½ per cent. in excess of that applied for.

4. The assessments were as follows :—

			Kharif. Rs.	Rabi. Rs.	Total. Rs.
1888-89	...	...	3,884	2,042	5,926
1889-90	...	...	4,782	2,490	7,272

No remissions had to be granted. The increase is 23 per cent., and shows that the irrigation is steadily improving. In addition to the above revenue, a sum of Rs. 3,450 was realized for water power and Rs. 178 for grass, bringing the total gross revenue up to Rs. 10,900.

5. The average water-rate was Rs. 1·74 as compared with Rs. 1·54 for 1888-89.

6. The principal crop acreages were as follows :—Rice 83, jowári 1,393, rági 165, rála 236, barley 105, maize 983, cotton 96, gram 176, sugar-cane 49, sweet potatoes 110, chillis 323, and plantain 16.

7. The slight enhancement of the water-rate introduced this year has proved satisfactory, inasmuch as there has been no diminution in area irrigated, while there has been, on the other hand, a considerable increase of revenue. These rates can still further be increased when the improved storage is available, the works for which are drawing near completion.

8. The working expenses, as compared with the previous year, are as follows :—

			Rs. .
1888-89	...	...	4,794
1889-90	...	...	4,249

The decrease is nearly $11\frac{1}{2}$ per cent., and represents 39 per cent. on the gross revenue. The rate per acre irrigated is Rs. 1·01 as against Rs. 1·24 for 1888-89.

9. The area irrigated was measured by a special establishment costing Rs. 653 and giving an average rate per acre of annas 2 and pies 6. The special establishment consisted of one measurer with khalásis; the former is also canal inspector, and supervises the distribution of the water, in addition to his other duties, and consequently only a portion of his pay is charged to the measuring establishment.

10. No new plantations were formed; the existing trees were maintained at a cost of Rs. 217; the number over 2 feet in height being 5,891 and chiefly consist of bábhul, mango, nimb, tamarind, pompari, and banian.

11. Observations as to the extent of leakage and evaporation in the first 12 miles of the Wadurhatti Branch were taken on the 28th December, and gave an average result of 1·4 cubic feet loss per mile.

12. The average discharge, in cubic feet per second, as gauged at the canal head was for the kharif 30·3 and for the rabi 35·03, representing a duty of 99 and 84 acres per cubic foot respectively.

PART II.

COMPRISING WORKS IN OPERATION FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

1. The following table shows the areas irrigated in the different districts in the Deccan and Gujarāt and the consolidated revenue assessed during the year :—

Collectorates.	Area irrigated.	REVENUE.				Remarks.
		Irrigation Share.	Land Share.	Total.	Average rate per acre irrigated.	
1	2	3	4	5	6	7
	Acres.	Rs.	Rs.	Rs.		
Ahmedabad ...	10,420	12,345	31,538	43,883	4.21	
Kaira ...	8,098	28,809	11,003	39,812	4.91	
Surat ...	12,162	49,179	1,13,890	1,63,069	13.40	
Khāndesh ...	8,853	57,127	12,215	69,342	7.83	
Nāsik ...	28,364	1,61,537	37,906	1,99,443	7.03	
Ahmednagar ...	147	353	132	485	3.29	
Poona ...	505	2,857	1,015	3,872	7.66	
Sátara ...	183	505	335	840	6.31	
Belgaum ...	10,027	34,615	8,643	43,258	4.31	
Dhārwar ...	64,624	1,70,813	42,697	2,13,510	3.30	
Bijapur ...	765	3,407	845	4,252	5.55	
Retnágiri ...	1,105	4,988	374	5,362	4.85	
Total ...	145,203	5,26,535	2,60,593	7,87,128	5.42	
Average rate per acre irrigated ...	...	3.62	1.79	5.42	...	

2. The following table shows the actual expenditure and receipts for the year 1889-90 on all works in the Deccan and Gujarāt for which only Revenue accounts are kept :—

Collectorate.	EXPENDITURE.									ACTUAL RECEIPTS.					
	Direct Charges.								Indirect Charges	Direct Receipts.			Indirect Receipts.	Grated Total Direct and Indirect Receipts.	
	Extensions and Improvements.	Maintenance and Repairs.	Establishment.		Tools and Plant.	Refunds of Revenue.	Total Direct Charges	Share of Collection Charges	Grand Total.	Water-rates from Irrigation.	Miscellaneous.	Total Direct Receipts.	Share of Consolidated Revenue.		
			Director.	Executive.											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Ahmedabad	...	4,750	238	2,059	109	...	10,346	1,249	14,507	58	6	64	13,845	12,409	
Kaira	...	2,193	...	...	...	...	...	2,923	...	375	...	375	22,809	29,184	
Surat	...	3,095	330	2,534	190	...	15,783	4,918	20,701	...	16	...	49,179	49,195	
Broach	...	4,814	...	...	...	...	...	...	...	...	...	...	...	...	
Nasik	...	1,608	11,062	692	81,543	284	85,742	16,800	1,07,755	1,458	238	1,747	1,61,537	1,63,254	
Khudesh	...	622	9,608	...	...	...	...	5,713	...	...	46	...	57,127	57,173	
Ahmednagar	...	...	...	-9,265	...	...	-9,265	36	-9,230	...	...	...	...	...	
Poona	...	...	2	...	20	...	...	22	354	379	681	...	...	...	
Satara	...	...	...	...	...	...	...	51	51	...	...	...	...	...	
Bolgaum	...	3,732	...	...	...	...	...	3,493	...	...	...	...	...	...	
Dhārwar	...	16,063	683	14,800	2,600	...	37,478	17,146	57,894	439	1,408	1,937	1,70,813	1,72,750	
Bijapur	...	2,355	58	484	...	...	2,897	355	3,252	139	253	392	3,407	3,798	
Retnāgiri	...	361	10	70	...	...	431	499	930	...	...	...	4,988	4,988	
Total	...	2,528	63,820	1,961	71,745	3,183	...	1,43,237	52,961	1,96,228	3,160	2,108	5,268	5,26,535	5,31,793

3. The total amount of revenue realized from and the working expenses of this class of works during the past three years were as follows :—

	1887-88.	1888-89.	1889-90.
Revenue realized ...	Rs. 5,23,453	Rs. 5,25,557	Rs. 5,31,793
Working expenses ...	1,78,089	1,57,647	1,96,228
Net Revenue ...	3,45,364	3,67,910	3,35,565
Percentage of working expenses to Revenue ...	34.02	29.99	36.89

The excess under working expenses is principally under establishment charges, which is chiefly due to the classification of the Násik District as 'Imperial.'

4. The following table shows the butlay from Contribution and Pátphala Funds on all works for which only Revenue accounts are kept for the year 1889-90:—

Collectorates.	EXPENDITURE.			REMARKS.
	Contribution.	Pátphala Fund.	Total.	
1	2	3	4	5
Ahmedabad	...	...	...	
Kaira	...	...	...	
Surat	...	...	...	
Násik	723	705	1,428	
Khándesh	79	690	769	
Ahmednagar	...	...	...	
Poona	...	...	...	
Sátára	...	...	...	
Belgaum	650	...	650	
Dhárwár	3,680	...	3,680	* Accounted for in the Finance Accounts under "Works for which neither Capital nor Revenue Accounts are kept."
Bijápúr	...	...	...	
Ratnágiri	...	...	...	
Total	5,132	1,395	*6,527	

Khári Irrigation Sluices.

5. No new works were carried out during the year under report. Special repairs to Khawla Channel, new Malarpura Channel, and repairs to breaches to the Sharanga Tank were made.

6. The receipts for the year 1889-90 amounted to Rs. 49,711, and were derived from the following sources:—

Description.	Acres.	Assessment.
		Rs.
I.—Irrigation above the Kalambandi villages ...	856	3,780
II.—Irrigation from tanks fed by the river Khári ...	266	2,034
III.—Irrigation from Khári sluices proper ...	8,755	43,897
IV.—Irrigation below the Kalambandi villages ...	.....	.....
Total ...	9,877	49,711

The increase in area irrigated and revenue derived is due to more favourable rainfall than in the previous year.

7. The mean rate of assessment was Rs. 4.42 on land for which water was taken by lift above the Kalambandi villages, and Rs. 7.65 for lands irrigated by the tanks fed from the river Khári. On land under the Khári sluices proper the rates are consolidated, the average share per acre, respectively, for land and water being as under:—

	Land Share.	Water Share.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	1 15 2	5 5 2	7 4 4
Alienated land	2 1 6	5 5 9	7 7 3
Inámi land, consolidated assessment ... ..	.....	.....	7 12 7
Jiráyat land ... ..	.....	2 8 2	2 8 2

8. The working expenses during the year, exclusive of charges for revenue collections, amounted to Rs. 1,296.

Old Works.

9. Repairs, chiefly consisting of raising the bunds and providing pipe outlets, &c., for regulating the irrigation were carried out to 9 tanks in Ahmedabad at a cost of Rs. 4,384.

10. During the year under report, 15 irrigation tanks in Surat District and 4 tanks in Anklesvar Táluka of the Broach Collectorate were repaired at a total cost of Rs. 13,006. Of the 15 tanks, 4 are in the Olpád Táluka, 2 in Chikhli, 1 in Jalálpor, 7 in Bulsár and 1 in Párdi. The irrigation tanks in these districts are under the management of the Revenue Department, and no separate establishment is entertained on this account. Receipts also are accounted for in the Revenue Department.

11. The following statement, furnished by the Collector of Broach, shows the particulars regarding lands irrigated from the tanks repaired by the Irrigation Department during the year 1889-90 in the Broach District:—

1	2	3				4				5				6
Serial Number.	Name of Village.	TANKS REPAIRED BY THE IRRIGATION DEPARTMENT IN 1889-90.				RICE LANDS CHARGED WITH WATER-RATE FOR BEING IRRIGATED FROM THE TANKS.				OUT OF THE LANDS SHOWN IN COLUMN 4—LANDS WHICH YIELDED CROPS IN 1889-90.				REMARKS.
		Survey Number.	Area.		Area.		Assessment.		Area.		Assessment.			
			Acres.	Guns. this.	Acres.	Guns. this.	Land Share.	Irrigation Share.	Acres.	Guns. this.	Land Share.	Irrigation Share.		
	Ankleswar.						Rs. a. p.	Rs. a. p.			Rs. a. p.	Rs. a. p.		
1	Sisodia ...	1	66	11	77	25	400 15 0	325 1 0	77	25	400 15 0	325 1 0		
2	Bhadi ...	235	22	6	38	5	218 1 10	167 1 2	34	5	207 2 9	167 13 3	The 2 acres of land not cultivated is included in the khateddar's occupancy, and full assessment for it is received.	
3	Sangpur ...	2-1	10	32	28	18	193 3 1	84 4 11	24	33	178 11 10	58 1 9	The 3 acres and 28 gunthas of land not cultivated in 1889-90 is included in the khateddar's occupancy, and full assessment for it is received.	
	Hanot.													
1	Kantiajal...	88	23	8	80	25	172 4 3	31 15 9	30	9	170 0 3	31 9 9	The difference between columns 4 and 5 is 16 gunthas, which area is not Government waste land, but in the possession of the occupant.	
	Kharach ...	238	11	13	52	5	232 5 0	153 7 0	52	5	232 5 0	153 7 0		
	Total ...	...	...	...	224	38	1,221 13 2	741 13 10	218	37	1,187 2 10	724 0 9		

12. In the Násik District proper, repairs to 15 old works were executed at a total expenditure of Rs. 5,184, including the amount of contribution from the villagers, &c. The principal bandbárás, the repairs to which were completed or were in progress during the year, were as follows:—

Pimpalgaon-Ketki Bandhára	...	...	} Táluka Dindori.
Nilwandi Bandhára	...	...	
Rájápur Bandhára	...	...	
Bhutváni Bandhára	...	...	} Táluka Chándor.
Lendi Nala do.	...	...	
Bhatgaon do.	...	...	
Sarul Bandhára at Brahmangaon	...	...	Táluka Niphád.

13. In Khándesh Irrigation District there are 77 second class works in the Khándesh portion and 84 in the Násik portion of the district.

14. Owing to scanty rainfall many of the villagers have had to curtail the hot-weather irrigation this year, and the need for storage tanks has become more apparent than ever. On some channels there was no irrigation at all in the hot weather of 1890, and this has led, as is natural, to greater neglect than ever of the maintenance of the earth-work and silt clearance. So far the revenue is not seriously affected by this neglect, but the state of the channels generally is so bad that it has become a matter for serious consideration whether it is wise to leave their maintenance so much in the hands of the irrigators. It seems desirable

and necessary that some means of control should be devised. Many channels certainly are well looked after, and the Patil and the irrigators take an interest in this work; but there are many where either neglect is the rule, and no means exist by which such neglect can be dealt with, or the damage to works, which it leads to, be prevented. It is an unfortunate characteristic amongst many of the irrigators that the more they see Government disposed to help them over serious difficulties by constructing additional cross drainage works and improving the head works, the less they are disposed to do thoroughly what has been their own fair share of the work from ancient times, namely, the petty maintenance.

15. Improvements of and repairs to several works were carried out during the year at an expenditure of Rs. 51,525, including establishment and tools and plant.

16. The figures of areas, assessments, realizations and working expenses are given in paras. 1 and 2 of this part.

17. The works in Ahmednagar and Poona need no notice. Particulars regarding area, assessment, revenue and working expenses are given in the paras. referred to in the preceding para.

18. A sum of Rs. 4,382 was expended on the repairs of Belgaum Fort tank and in payment of land compensation (Rs. 4) for Dhamangi tank repairs.

19. In Dhárwár a sum of Rs. 19,743, of which Rs. 3,680 was from popular contribution, was expended on the repairs to 27 tanks and on surveys of 11 tanks. The question of maintenance of old works of irrigation in this district was referred to the Collector of Dhárwár for report in consultation with the Superintendent, Southern Marátha Country Survey, and the Executive Engineer for Irrigation, Belgaum and Dhárwár. The report has been received, and is under the consideration of Government.

Agricultural Works.

20. The following is an abstract of the statement of consolidated revenue from drainage and protective works in the Broach District:—

Number.	Name of Work.	Area assessed under the settlement.	Area cultivated during the year.	Assessment of the year.	Remissions.	Net consolidated assessment.	Irrigation share.	Land share.
		Acres.	Acres.	Rs.	Rs.	Rs.		Rs.
1	Kora Madaphar and Jantran Channel	2,750	817	2,954	22	2,932	...	2,932
2	Amanpur-Nadiad Channel	980	320	1,360	...	1,360	...	1,360
3	Samadpur, Kadodra and Panidra channels	497	...	...	...	...	...	...
	Grand Total ...	4,227	1,137	4,314	22	4,292	...	4,292

The improvements to these drainage channels have rendered fit for cultivation lands which had hitherto remained water-logged and unculturable. The revenue derived may, therefore, be taken credit for as a return wholly due to the expenditure on the channels. The total expenditure amounted to Rs. 27,399 and the revenue to Rs. 4,292, equivalent to a return of 15 per cent.

APPENDICES.

Statement showing Revenue and Working Expenses on Ordinary

Year.	Sd'ra'ra																	
	(25) Revéri Canal.						(26) Upper Mán River Works.						(27) Yerla River					
	Capital cost to end of 1889-90, Rs. 24,954.						Capital cost to end of 1889-90, Rs. 4,04,974.						Capital cost to end of 1888-89.					
	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.		
1885-86	777	1,581	74	1,955	4,387	2,932	980	2,840	100	2,440	1,997	443	1,531	4,327	414	4,641		
1886-87	682	2,609	81	2,690	2,787	97	994	3,393	120	3,453	5,133	1,685	1,256	5,723	366	6,089		
1887-88	754	3,006	118	3,124	1,879	1,245	1,044	3,600	76	3,676	5,118	1,442	1,161	4,706	713	5,419		
1888-89	1,000	3,308	86	3,394	1,976	1,418	1,380	4,528	233	4,761	4,971	210	1,663	4,910	782	5,692		
1889-90	1,225	3,056	89	3,145	2,476	669	1,431	5,646	199	5,828	3,600	2,228	1,924	7,644	628	8,270		
Totals ..				14,308	14,005	303				20,156	20,324	668				30,111		

Year.	BELGAUM DISTRICT.												Dudhawa's									
	(32) Gádikeri Tank.						(33) Dámáal Tank.						(34) Molleri Tank.									
	Capital cost to end of 1889-90, Rs. 8,915.						Capital cost to end of 1880-90, Rs. 69,847.						Capital cost to end of 1889-90.									
	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.						
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.						
1885-86		1,589	1,806	3,455	387	3,068	46	205	960	1,231	1,499	268	129	347	..	347						
1886-87		1,589	1,806	3,455	684	2,771	3	306	1,046	1,442	576	866	136	404	..	404						
1887-88		432	2,127	2,559	269	2,290	58	330	1,061	1,391	661	730	26	254	..	254						
1888-89		..	2,127	2,127	2,008	119	218	834	1,001	1,835	530	1,305	116	817	..	817						
1889-90	337	..	2,127	2,127	385	1,742	152	547	1,189	1,736	553	1,183	104	445	..	445						
Totals ..				13,723	3,703	10,020				7,635	3,819	3,816				2,267						

Rs.
Total Revenue for 4 years, or
to end of 1889-90 .. 95,927
" Working expenses .. 1,01,019
" Net loss 2,092

Rs.
Total Revenue for 5 years, or
to end of 1889-90 .. 1,84,782
" Working expenses .. 1,25,449
" Net profit 59,333

Rs.
Clear profit for 1889-90 .. 11,415

DIX A.

Irrigation Works in Southern Division during the last 5 years.

District.														Bisrampur District.							
Works.		(28) Chikiti Canal.							(29) Maini Tank.							(30) Muchkundi Tank.					
Rs. 6,08,573.		Capital cost to end of 1899-90, Rs. 53,803.							Capital cost to end of 1932-30, Rs. 3,41,905.							Capital cost to end of 1887-90, Rs. 1,39,188.					
Working Ex- penses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Ex- penses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Ex- penses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working Ex- penses.	Profit or Loss.		
Rs.	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.		
5,404	763	282	1,150	78	1,247	1,201	36	1,463	4,211	52	4,263	4,331	68	..	..	36	86	297	261		
7,043	954	264	981	30	1,011	1,280	269	1,073	3,223	49	3,272	4,313	1,041	3	12	100	112	47	350		
1,265	1,846	307	1,169	40	1,209	1,092	117	1,076	5,356	109	5,465	4,191	1,274	3	25	67	92	406	314		
5,405	713	403	1,452	42	1,494	975	519	1,887	3,287	475	3,772	3,661	211	2	19	150	160	373	204		
5,913	2,327	413	1,414	33	1,452	1,692	150	1,775	9,328	274	9,602	4,300	4,712	2	19	161	180	1,251	1,171		
12,090	1,919				6,403	6,150	253				26,374	21,286	5,088			288	2,399		2,310		

District.																			
		(35) Madag Tank.							(36) Asundi Tank.										
Rs. 78,354.		Capital cost to end of 1899-00, Rs. 1,61,248.							Capital cost to end of 1899-00, Rs. 60,741.							Total Capital Cost of all Works. Rs. 19,73,692.			
Working expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working expenses.	Profit or Loss.	Area irrigated.	Water-rate Assessments.	Indirect and Miscellaneous Revenue.	Total Revenue.	Working expenses.	Profit or Loss.	Note.—Taking the cost of all the works, the return is 57 per cent. on the capital after deducting working expenses. <					

S. B. DOIG, M.Inst.C.E.,
Acting Superintending Engineer, S. D.

BELGAUM COLLECTORATE.

LIST SHOWING IRRIGATION TANKS, EACH IRRIGATING 50 ACRES
AND MORE LAND, ACCORDING TO THE REVENUE SURVEY
RECORDS FURNISHED BY THE MA'MLATDARS, 1890.

List of Irrigation Tanks

Number of Village.	Name of Village.	Population.	Number of Tank.	Name of Tank in the Village.	Survey Number in which the Tank is situated.	Size of the Tank.	Number of sluice-gate.	Description of Government or of the Tank and whether direct Revenue is derived from any Land.	Extent of Land under			
									Garden Land.		Rice Land.	
									Area.	Total Assessment.	Area.	Total Assessment.
1	2	3	4	5	6	7	8	9	10	11	12	13
Belgaum Taluka.												
1	Ankalgi	1,566	1	Ramalinga Devarkeri	308	8 7	2	Government	0 5	0 8 0	61 26	308 8 0
2	Badas	963	2	Dodakeri	265	11 13	2	Idam	12 95	58 4 0	12 95	58 4 0
3	Bendigeri	1,237	3	Dodakeri	169	19 32	2	Government	...	...	54 11	241 11 0
4	Belgaum	24,391	4	Silledkeri	996	41 26	3	Idam	75 37	319 10 0	19 26	98 0 0
5	Desur	1,073	5	Jakirihond	219	23 38	1	Government	...	...	353 4	2,739 0 0
6	Dharwad	2,424	6	Kalasapakeri	89	3 16	2	Idam	233 57	2,129 0 0	315 15	2,774 4 0
7	Halkarni	862	7	Kalapakeri	153	3 10	2	Idam	314 16	2,833 8 0	63 4	306 10 0
8	Hindalgi	586	8	Bodkurikeri	723	11 36	2	Government	...	...	55 17	362 0 0
9	Kadalg Budruk	547	9	Gavatil Talav	808	2 11	2	Idam	45 4	195 2 0	82 20	336 12 0
10	Kini	635	10	Samsadi Talav	67	0 25	2	Government	3 20	15 8 0	114 38	696 8 0
11	Kowad	1,568	11	Sawarikeri	21	2 3	2	Idam	75 23	458 12 0	54 3	345 14 0
12	Mutnal	1,006	12	Kadaligikeri	66	5 81	2	Idam	24 39	153 8 0	29 2	106 8 0
13	Nagardale	647	13	Gavajavali Talav	110	8 16	2	Idam	30 21	76 8 0	61 35	285 7 0
14	Nandihali	1,450	14	Gavakhalch Talav	426	2 32	2	Government	...	...	29 7	119 6 0
			15	Alekeri	7	12 16	1	Idam	33 18	145 6 0	15 38	74 13 0
			16	Santikeri	30	0 23	2	Government	103 17	584 2 0	29 37	154 8 0
			17	Garkeri	9	4 24	3	Idam	79 18	330 12 0	48 37	194 14 0
								Government	34 25	174 11 0	38 33	128 0 0
								Idam	18 10	88 7 0	34 25	174 11 0
								Government	3 25	18 0 0	1,458 361	9,216 6 0
								Idam	1,164 1	7,703 3 0	1,458 361	9,216 6 0
Sampgaon Taluka.												
1	Ambadgati	1,493	1	Dodakeri	241	15 19	2	Government	...	...	190 24	859 11 0
2	Amarnapur	136	2	Yemulawar Keri	137	9 35	1	Idam	27 17	108 12 0	27 17	108 12 0
3	Bachinkeri	396	3	Bulikeri	74	6 28	1	Government	...	...	78 11	328 0 0
4	Bailur	2,483	4	Hirekeri	34	17 27	2	Idam	92 3	301 1 0	43 18	161 1 0
5	Bisarkod	583	5	Iravkeri	59	18 28	2	Government	...	...	82 8	355 7 0
6	Devar Bhigiballi	1,450	6	Kanchukeri	76	11 28	2	Idam	25 0	91 8 0	119 3	466 8 0
7	Kadarwali	1,614	7	Hirekeri	290	20 0	2	Government	...	...	85 35	336 10 0
8	Kittur	6,300	8	Jiglikeri	37	6 30	2	Idam	45 91	245 12 0	217 9	778 3 0
9	Mardi Nagapur	810	9	Komarkaneri	62	6 30	1	Government	...	...	80 18	320 10 0
10	Margankop	460	10	Komarkeri	90	30 15	2	Idam	66 25	223 13 0	66 25	223 13 0
11	Mogutkhon Hubli	4,459	11	Hoekeri	80	11 17	2	Government	...	...	6 0	18 3 0
12	Ugarkod	990	12	Iravkeri	50	12 5	2	Idam	162 12	244 10 0	252 11	825 12 0
13	Virapur	585	13	Waddankeri	116	9 22	1	Government	...	...	94 94	307 0 0
			14	Khandakkeri	240	10 2	1	Idam	109 15	458 2 0	109 15	458 2 0
			15	Tumbgeri	90	38 27	1	Government	...	...	47 35	265 9 0
			16	Arshangeri	68	6 22	1	Idam	11 22	130 5 0	84 96	406 10 0
			17	Angadiyewarkeri	47	4 16	1	Government	...	...	69 16	294 0 0
			18	Tumbawakeri	127	15 28	2	Idam	45 30	258 7 0	10 35	159 0 0
			19	Gaddikeri	244	129 6	1	Government	...	...	145 2	701 6 0
			20	Hirekeri	66	8 38	2	Idam	43 24	290 12 0	43 24	290 12 0
			21	Balsokeri	125	8 23	2	Government	...	...	278 9	2,214 11 0
			22	Jalkeri	115	12 2	2	Idam	66 35	414 2 0	66 35	414 2 0
			23	Dumkeri	118	9 24	2	Government	...	...	146 38	547 2 0
								Idam	13 19	58 0 0	113 2	453 12 0
								Government	14 10	54 4 0	14 10	54 4 0
								Idam	23 23	118 3 0	23 23	118 3 0
								Government	29 17	127 12 0	29 17	127 12 0
								Idam	54 38	310 0 0	54 38	310 0 0
								Government	13 5	122 0 0	13 5	122 0 0
								Government	2,554 17	11,744 11 0	2,554 17	11,744 11 0
								Idam	609 4	3,536 11 0	609 4	3,536 11 0
Khandapur Taluka.												
1	Adibidi	2,600	1	Virabhadraikeri	25	3 22	2	Government	...	...	189 24	1,090 9 0
2	Ambigadpur	...	2	Puradkeri	39	5 9	1	Idam	13 24	85 6 0	13 24	85 6 0
3	Bogur	595	3	Malligwadkeri	41	10 10	2	Government	...	...	63 2	206 4 0
4	Chik Hattholi	580	4	Dowgeri	48	12 33	2	Idam	116 29	105 0 0	63 2	206 4 0
5	Dewlati	903	5	Sutikeri	107	6 1	2	Government	...	...	31 3	140 3 0
6	Gandigwad	1,332	6	Dodkeri	206	30 10	2	Idam	138 16	689 12 0	138 16	689 12 0
7	Godgeri	721	7	Dodkeri	30	13 39	2	Government	...	...	28 38	130 4 0
8	Godoli Amblikop	893	8	Dodkeri	108	23 38	4	Idam	120 12	518 8 0	120 12	518 8 0
9	Goliwali	501	9	Kulavankeri	75	15 27	2	Government	...	...	54 0	271 0 0
								Idam	294 26	1,616 6 0	294 26	1,616 6 0
								Government	42 16	190 0 0	42 16	190 0 0
								Idam	99 50	241 2 0	99 50	241 2 0
								Government	57 36	167 6 0	57 36	167 6 0
								Idam	154 26	541 4 0	154 26	541 4 0
								Government	61 3	229 10 0	61 3	229 10 0
								Idam	72 12	344 10 0	72 12	344 10 0
								Government	26 29	112 4 0	26 29	112 4 0

NOTE.—Shares of consolidated assessments are taken at one-fifth for land and four-fifths for water as per Government of India's Resolution.
*Capital and Reserve Accounts have been kept for this work.

No. 152 A. I., dated 30th March 1878, quoted in the preamble to G. R. No. 86 A. I.-252, dated 10th April 1878.

List of Irrigation Tanks

Number of Village.	Name of Village.	Population.	Number of Tank.	Name of Tank in the Village.	Survey Number in which the Tank is situated.	Size of the Tank.	Number of sluice-gates.	Description of Land, whether Government or Inam, and whether direct Revenue is derived from any Land.	Extent or Land Under			
									Garden Land.		Rice Land.	
									Area.	Total Assessment.	Area.	Total Assessment.
1	2	3	4	5	6	7	8	9	10	11	12	13
				Khadapur Taluka—contd.							A. g.	Rs. a. p.
10	Handur ...	818	10	Hosteri ...	115	10 29	2	Government ...	...	...	78 0	321 12 0
11	Hebbal ...	934	11	Woorhatikeri ...	3	4 7	2	Inam ...	...	...	10 0	43 8 0
12	Hindalgi ...	529	12	Wadinker ...	58	2 4	2	Government ...	...	...	33 6	111 2 0
13	Hagi ...	2,718	13	Dodker ...	349	50 17	2	Inam ...	...	...	42 21	140 2 0
				Benchinwardikeri ...	301	5 6	1	Government ...	...	...	93 0	479 2 0
14	Jiknur ...	173	15	Kempkeri ...	14	7 31	2	Inam ...	...	...	55 23	257 4 0
15	Kagangi ...	112	16	Dodkeri ...	42	5 33	1	Government ...	...	...	567 17	3,418 11 0
16	Karambal ...	422	17	Haladkeri ...	90	3 17	2	Inam ...	...	...	176 11	1,036 6 0
17	Kodachiwad ...	771	18	Kalikeri ...	84	4 32	2	Government ...	...	...	162 29	439 0 0
18	Kupatgeri ...	360	19	Maharikikeri ...	5	1 18	1	Inam ...	...	...	62 26	382 14 0
19	Manoli Chick ...	727	20	Karekeri ...	54	9 1	2	Government ...	...	...	49 10	218 4 0
20	Manoli Kasoa ...	890	21	Dodkeri ...	2	22 1	1	Inam ...	...	...	92 24	333 0 0
21	Nandgad Kasba ...	596	22	Honaramankeri ...	75	22 27	3	Government ...	...	...	90 29	234 14 0
22	Nandgad Mouze ...	6,779	23	Chambgarkeri ...	60	6 10	1	Inam ...	...	...	30 10	78 4 0
23	Ningammat ...	1,027	24	Hblikeri hadikeri ...	114	5 36	2	Government ...	...	...	54 0	246 1 0
			25	Dodkeri ...	60	5 24	2	Inam ...	...	...	7 0	26 2 0
24	Parshwad ...	1,384	26	Kumbarkeri ...	218	3 2	3	Government ...	...	...	12 36	51 2 0
25	Tolgi ...	874	27	Dodkeri ...	237	8 39	2	Inam ...	...	...	51 29	260 3 0
26	Wadibail ...	340	28	Masatikeri ...	150	2 35	1	Government ...	...	...	10 20	43 6 0
			29	Nagolikeri ...	88	5 29	1	Inam ...	...	...	51 29	260 3 0
	Total ...		29					Government ...	...	...	118 21	387 8 0
								Inam ...	...	...	104 8	464 2 0
								Government ...	...	...	91 32	235 8 0
								Inam ...	...	...	128 27	331 14 0
								Government ...	...	...	33 20	87 0 0
								Inam ...	...	...	77 11	252 12 0
								Government ...	...	...	8 21	29 0 0
								Inam ...	...	...	75 37	310 4 0
								Government ...	...	...	13 3	56 4 0
								Inam ...	...	...	211 5	832 14 0
								Government ...	...	...	117 32	488 4 0
								Inam ...	...	...	103 31	466 10 0
								Government ...	...	...	38 25	196 6 0
								Inam ...	...	...	3,828 9	15,294 13 0
								Government ...	...	...	1,071 34	4,576 11 0
								Inam ...	...	...		
				ABSTRACT.								
			17	Belgaum Taluka ...	...	...	...	Government ...	3 25	16 0 0	1,453 26½	3,816 6 0
			23	Sampgaon do. ...	...	...	...	Inam ...	...	...	1,154 1	7,703 3 0
			29	Khanapur do. ...	...	...	...	Government ...	...	...	2,554 17	11,754 11 0
					...	...	...	Inam ...	...	...	689 4	3,586 11 0
					...	...	...	Government ...	...	...	3,828 9	15,294 13 0
					...	...	...	Inam ...	...	...	1,071 34	4,576 11 0
				Total ...	...	...	...	Government ...	3 25	16 0 0	7,326 22½	36,305 14 0
					...	...	...	Inam ...	...	...	2,924 39	15,816 9 0
			69	Grand Total ...	...	...	...	Government ...	3 25	16 0 0	10,261 21½	52,122 7 0
					...	...	...	Inam ...	...	...		

Camp Gokak Canal, 22nd January 1890.

in the Belgauu Collectorate—continued.

CULTIVATION AND ASSESSMENTS.				DIVISION OF ASSESSMENT.								Date of introduction of Settlement.	Area of Catchment Basin Sq. miles.	Cross storage capacity in millions Cubic feet.	REMARKS.	Number of Tanks.
Land assessed at dry-crop rate at the Settlement, but now irrigated.		Total Area of Irrigation.	Total Assessment.	Government Revenue.				Indimdar's Revenue.								
Area.	Total Assessment.			Irrigation Share.	Land Share.	Irrigation Share.	Land Share.	Irrigation Share.	Land Share.							
14	15	16	17	18	19	20	21	22	23	24	25					
A. g.	Rs. a p.	A. g.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.	Rs. a p.					
...	...	78 0	321 12 0	257 6 5	64 5 7	23 10 10	5 14 8	...	...	...	10					
...	...	10 0	43 8 0	11 2 0	2 12 6	...	...	...	...	...	11					
...	...	33 6	111 2 0	88 14 5	22 5 7	...	...	...	...	...	12					
...	...	43 21	140 2 0	56 6 5	14 1 7	55 11 3	13 14 0	...	...	...	13					
...	...	93 0	476 2 0	380 14 5	95 3 7	...	...	...	...	...	14					
...	...	56 28	267 4 0	111 2 7	27 12 7	102 10 4	25 10 6	...	...	...	15					
...	...	567 17	3,413 11 0	2,734 15 3	683 11 9	647 14 6	161 15 8	...	...	1:13	16					
...	...	176 11	1,036 6 0	181 3 1	45 4 9	...	...	...	...	...	17					
...	...	102 20	490 5 0	392 4 0	98 1 0	...	...	...	...	...	18					
...	...	6 39	82 3 0	5 8 3	1 6 1	20 7 9	5 1 11	...	...	...	19					
2 24	2 10 0	...	...	...	...	...	...	...	...	...	20					
0 21	0 10 0	40 31	218 14 0	127 13 3	31 15 4	47 4 0	11 13 0	...	...	...	21					
...	...	92 24	233 0 0	186 6 5	46 9 7	...	...	...	...	...	22					
...	...	...	...	...	...	...	...	...	...	...	23					
...	...	80 29	230 14 0	184 11 3	46 2 0	...	...	...	...	...	24					
...	...	26 10	73 4 0	44 3 3	11 0 9	...	...	...	...	...	25					
...	...	54 0	246 1 0	196 13 7	49 3 5	...	...	...	...	...	26					
...	...	7 0	36 2 0	27 8 0	6 14 0	...	...	...	...	...	27					
...	...	13 26	51 2 0	40 14 5	10 8 7	...	...	...	...	...	28					
...	...	38 0	94 4 0	49 3 3	12 4 9	...	...	...	...	...	29					
...	...	51 20	247 15 0	198 5 8	49 9 4	...	...	...	...	...	30					
...	...	10 20	49 6 0	21 1 8	5 4 4	17 9 7	4 6 5	...	...	...	31					
...	...	51 29	260 8 0	205 2 5	52 0 7	...	...	...	...	...	32					
...	...	8 5	43 4 0	29 2 1	7 4 6	...	...	...	...	...	33					
...	...	104 8	454 2 0	363 5 0	90 13 0	...	...	...	...	...	34					
...	...	91 32	235 8 0	94 7 2	23 9 10	93 15 2	23 7 10	...	...	...	35					
...	...	115 21	387 8 0	310 0 0	77 5 0	...	...	...	...	...	36					
...	...	...	...	...	...	...	...	...	...	...	37					
...	...	125 27	331 14 0	265 8 0	66 6 0	...	...	...	...	...	38					
...	...	35 20	97 0 0	3 12 10	0 15 2	73 12 10	18 7 2	...	...	...	39					
...	...	77 11	252 12 0	202 3 2	50 7 10	...	...	...	...	...	40					
...	...	3 21	29 6 0	3 4 10	0 13 2	19 14 5	4 15 7	...	...	...	41					
...	...	78 37	359 4 0	287 6 5	71 13 7	...	...	...	...	...	42					
...	...	13 8	56 4 0	8 3 2	2 0 10	30 13 10	3 3 2	...	...	...	43					
...	...	211 5	832 14 0	705 4 9	176 9 3	...	...	...	...	...	44					
...	...	117 32	488 4 0	234 6 4	73 0 9	96 3 4	24 4 7	...	...	...	45					
...	...	103 31	468 10 0	373 4 10	93 5 2	...	...	...	...	...	46					
...	...	38 25	196 6 0	66 5 2	16 3 10	90 14 5	22 11 7	...	...	...	47					
2 24	2 10 0	3,380 33	15,237 7 0	12,189 15 8	3,047 7 4	.....	.....	...	...	...	48					
0 21	0 10 0	1,072 15	4,577 5 0	1,633 10 5	408 6 3	2,028 4 4	507 0 0	...	...	...	49					
6 24	8 12 0	1,464 54	9,341 2 0	7,473 0 0	1,368 2 0	.....	.....	...	...	...	50					
3 28	5 8 0	1,157 24	7,708 11 0	2,908 7 0	702 1 4	3,358 9 0	839 10 0	...	...	...	51					
...	...	2,554 17	11,754 11 0	9,403 4 0	2,350 14 0	.....	.....	...	...	...	52					
...	...	689 4	3,536 11 0	1,417 2 0	354 3 0	1,412 6 0	343 9 0	...	...	...	53					
2 24	2 10 0	3,330 33	15,237 7 0	12,189 15 8	3,047 7 4	.....	.....	...	...	...	54					
0 21	0 10 0	1,072 15	4,577 5 0	1,633 10 5	408 6 3	2,028 4 4	507 0 0	...	...	...	55					
9 8	11 6 0	7,349 154	36,833 4 0	28,066 12 8	7,266 7 4	.....	.....	...	...	...	56					
4 4	0 2 0	2,929 3	15,822 11 0	5,556 3 5	1,404 40 3	6,799 8 4	1,699 10 0	...	...	...	57					
13 12	17 8 0	10,278 184	52,155 15 0	34,926 0 1	8,731 1 7	6,799 3 4	1,699 10 0	...	...	...	58					

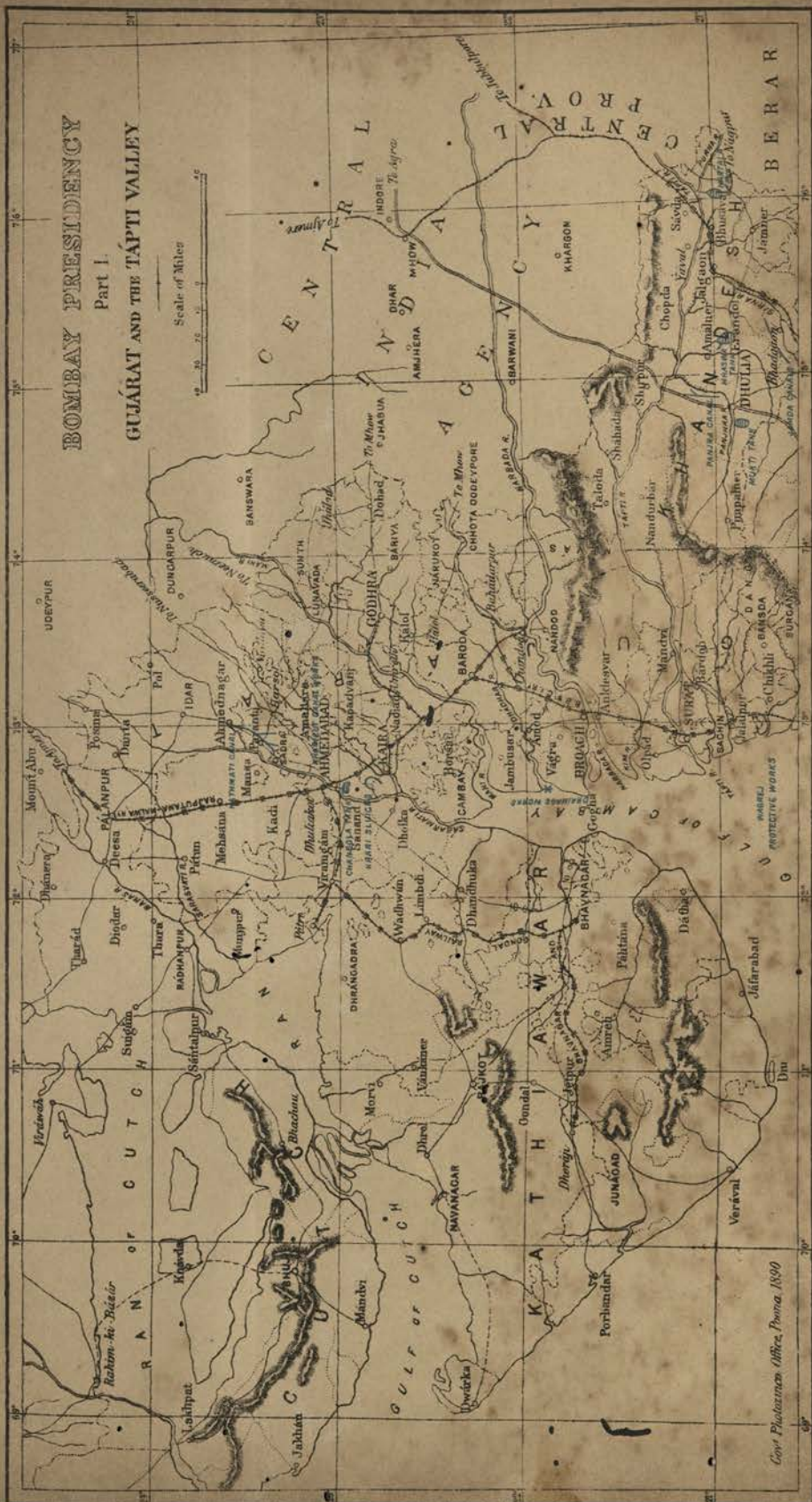
E. F. DAWSON, A.M.I.C.E.,
Executive Engineer for Irrigation,
Belgaum and Dhārwar District.

BOMBAY PRESIDENCY

Part I.

GUJARAT AND THE TAPTI VALLEY

Scale of Miles



Courtesy: British Library, India Office, London

AMRUTAPUR TAPTI CHANNEL.
 * JAMNAGAR TELLUR.
 * KOTLA NADIA.
 * VAPRA DU. S. GANDHARVA NADIA NADIA NADIA NADIA.





KAIRA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head-quarters
- Market Town or Rajpi Village
- Subdivision Head-quarters and Market Town
- Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief Trade Centres
- ▲ Place of Pilgrimage and Fair
- Travellers Bungalows
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- T Telegraph Office
- M Municipality
- H Hospital
- D Dispensary
- S Town School
- Ferry
- Bridge
- Toll
- Feet
- Made Road
- Railways open
- Railway Stations
- Light House
- Pier

6571 Heights above mean Sea level
Drainage Channels



KHANDESH COLLECTORATE EAST

Scale of Miles

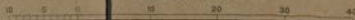


REFERENCE

- * Subdivision Head quarters
- Market Town or Big Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centre
- ▲ Place of Pilgrimage and Fair
- Traveller Bungalow
- District
- Head Post Office
- Sub Post Office
- Branch Post Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Well
- Fort
- Native Road
- Railway Line
- Railway Station

KHANDESH COLLECTORATE WEST

Scale of Miles



REFERENCE

- 1 Subdivision Head-quarters
- 2 Market Town or Royal Village
- 3 Subdivision Head-quarters and Market Town
- 4 City Division Head-quarters
- 5 Pany Division Head-quarters and Market Town
- 6 Chief Trade Centre
- 7 Head of Postage and Fair
- 8 Traveller Bungalow
- 9 District Jail
- 10 District Post Office
- 11 Sub Post Office
- 12 Branch Jail
- 13 Telegraph Office
- 14 Municipality
- 15 Hospital
- 16 Dispensary
- 17 Town School
- 18 Ferry
- 19 Bridge
- 20 Toll
- 21 Post
- Made Road
- Railway line
- Railway Station

Reduced
Scale 1/250,000

Copyright
1880

KHANDESH IRRIGATION NASIK COLLECTORATE

Scale of Miles

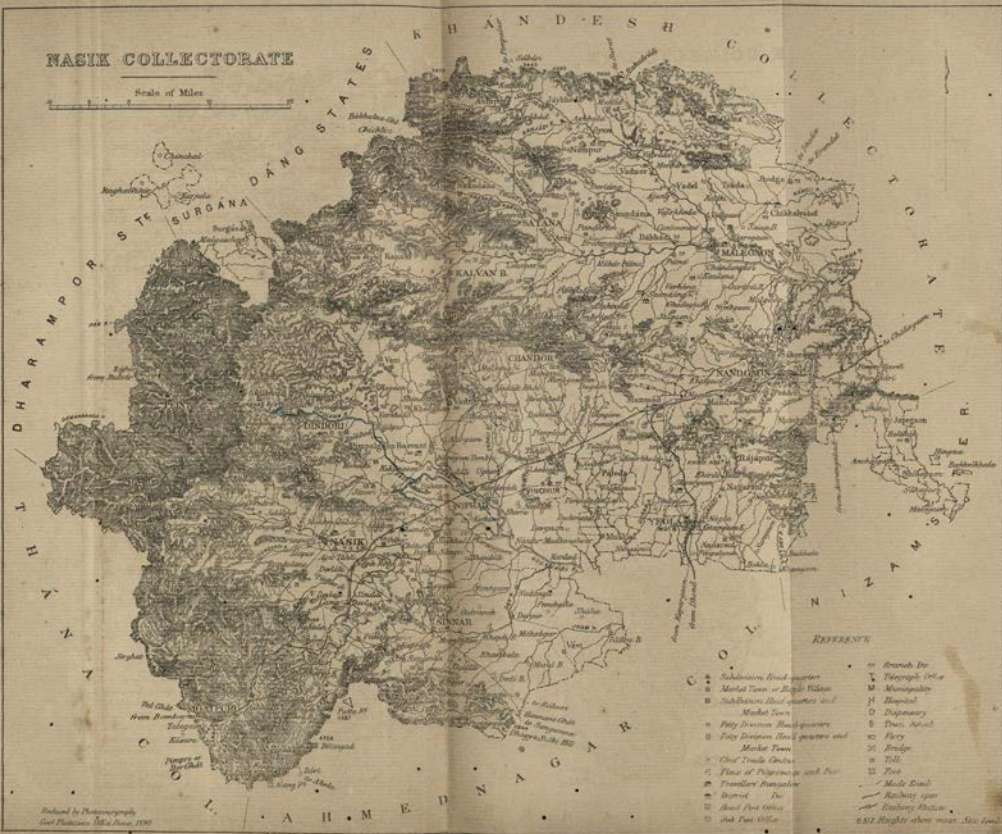
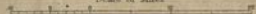


REFERENCE

- * Subdivision Head quarters
- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- Principal Bazar
- Bazaar
- Head Post Office
- Sub Post Office
- Branch Dr.
- Telegraph Office
- Mandir
- Hospital
- Dispensary
- Town School
- Fair
- Bridge
- Well
- Ghat
- Holy River
- Railway line
- Railway Station
- S.N.T. Height above mean Sea Level

NASIK COLLECTORATE

Scale of Miles



REFERENCE

- | | |
|--|--------------------|
| • Subdivision Head-quarters | • British Do. |
| • Market Town or Big Village | • Telegraph Office |
| • Subdivision Head-quarters and Market Town | • Municipality |
| • Fifty Houses Head-quarters and Market Town | • Hospital |
| • Fifty Houses Head-quarters and Market Town | • Dispensary |
| • Fifty Houses Head-quarters and Market Town | • Police Station |
| • Fifty Houses Head-quarters and Market Town | • Flax |
| • Chief Trade Centre | • Bridge |
| • First of Pipewine and Tea | • Tide |
| • Frontier Province | • Post |
| • British Do. | • Made Road |
| • Road Post Office | • Railway |
| • Sub Post Office | • Railway Station |

AHMEDNAGAR COLLECTORATE

Scale of Miles



REFERENCE

- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Panchayat Head-quarters
- Panchayat Head-quarters and Market Town
- Civil Police Office
- Place of Pilgrimage and Fair
- Travellers Bungalow
- District Office
- Road Post Office
- Sub Post Office
- Branch Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Fort
- Bridge
- Toll
- Fort
- Made Road
- Railway open
- Railway Station

5000 Feet above mean Sea level

Revised by Photo-aerograph
Geol. Department, India, 1901

POONA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head-quarters
- Market Town or Major Village
- Subdivision Head-quarters and Market Town
- Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- Frontier Bungalow
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Well
- Fort
- Mule Road
- Railway open
- Railway Station
- 2500 Feet above mean Sea level



SHOLAPUR COLLECTORATE

Scale of Miles



SATARA COLLECTORATE

Scale of Miles



REFERENCE

- | | |
|--|--------------------|
| • Settlements (Black squares) | • Towns (Red) |
| • Market Towns & Major Villages | • Temples (White) |
| • Settlements (Black squares) etc. | M Municipalities |
| • Market Towns | H Hospitals |
| • Petty Government (Black squares) | D Dispensaries |
| • Petty Government (Black squares) and | S Town School |
| • Market Towns | • Ferry |
| • Chief Town (Black) | • Bridge |
| • Town of Marathas and Pans | • Fall |
| • Travelling Bazaar | • Fair |
| • Bazaar | • Milk Road |
| • Road (Black line) | • Railway line |
| • Not Post Office | • Boundary Station |

• Height above mean sea level



REFERENCE

- Head-quarters
- Town or Major Village
- Head-quarters and Market Town
- Head-quarters
- Head-quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- District Boundary
- District Office
- Head Post Office
- Sub Post Office
- Branch Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Fort
- Bridge
- Toll
- Post
- Mode Road
- Railway open
- Do. in progress
- Railway Station

6431 Heights above mean Sea level



BELGAUM COLLECTORATE

Scale of Miles

IRRIGATION REVENUE REPORT

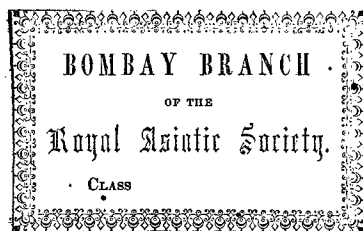
OF THE

BOMBAY PRESIDENCY

EXCLUDING SIND,

1890-91.

PARTS I & II.



IRRIGATION REVENUE REPORT
OF THE
BOMBAY PRESIDENCY,
EXCLUDING SIND,
1890-91

PARTS I & II.



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1890-91.

GENERAL REMARKS.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
		MAJOR WORKS.	
		<i>Protective Works.</i>	
Poona	1	Níra Canal	Storage lake at Bhátghar under construction, but affords storage to the extent of 3,288 millions cubic feet, the designed capacity being 5,500 millions.
Sholápur	2	Mhasvad Tank	Complete.
		<i>Productive Works.</i>	
Ahmedabad	5	Háthmati Canal	Survey for storage undertaken.
Khándesh	6	Lower Pánjhra River Works.	Storage tank at Mukti complete.
Násik	7	{ Kádva { Pálkhed Canal... River { Ojhar Támbat Works. { Canal. Wadáli Canal...	{ Wághad Tank completed with the exception of the waste weir.
Ahmednagar	8	Pravara River Works—Lákh Canal.	Máládevi Tank proposed for this work, but sanction withdrawn pending enquiry into modified proposals for the dam, and alternative proposals for a tank at Samrud.
Poona	9	Mutha Canals	Lake Fife at Khadakvásá complete.
Sholápur	10	Ekrúk Tank	Complete.
Sátára	11	Krishna Canal	Site for a storage reservoir is under consideration.
		MINOR WORKS AND NAVIGATION.	
Ahmedabad	12	Khári Cut	The Bokh project under revision.
	13	Hartála Tank... ..	Complete.
	14	Mhasva do... ..	Do.
Khándesh	15	Jámda Canals	Reservoir at Chankápúr sanctioned and commenced, but work suspended for want of funds.
	16	Pársul Tank	Complete.
Ahmednagar	17	Pravara River Works—Ojhar Canal.	Vide remark against (8) Lákh Canal.
	18	Bhátodi Tank	Complete.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MINOR WORKS AND NAVIGATION—continued.			
Poona ...	19	Mátoba Tank ...	Complete.
	20	Kásurdi do. ...	Do.
	21	Shirsuphal do. ...	Do.
	22	Bhádálvádi do. ...	Do.
Sholápur ...	23	Koregaon do. ...	Do.
	24	Ashti do. ...	Do.
Sátára ...	25	Revári Canal ...	Storage Tank at Sonkeh proposed.
	26	Upper Mán River Works ...	Pingli Tank complete.
	27	Yerla River Irrigation Works ...	Nehr Tank complete.
	28	Chikhli Canal ...	No storage works yet proposed.
	29	Maini Tank ...	Complete.
Bijápur ...	30	Muchkundi Tank ...	Do.
	31	Nilgund do. ...	Do.
Belgaum ...	32	Gadikeri Tank ...	Do.
Dhárwár ...	33	Dámbal do. ...	Do.
	34	Medleri do. ...	Do.
	35	Madag do. ...	Do.
	36	Asundi do. ...	Do.
	37	Mávinkop do. ...	Do.
<i>Provincial.</i>			
Belgaum ...	39	Gokák Canal, 1st Section ...	Storage works at Dhpudal practically completed.

Nos. 3 and 4, or Chankápur and Máládevi tanks, are not included, as the works were not in operation; the former has been suspended and the latter has not yet been approved. No. 38—Gokák Canal, 2nd Section,—is in abeyance.

2. The total Capital outlay during and up to the end of the year was as follows :—

Main Heads.	To end of 1889-90.	During 1890-91.	To end of 1890-91.
A.—Direct Charges.	Rs.	Rs.	Rs.
I.—Works ...	1,85,20,657	4,91,616	1,90,12,273
II.—Establishment ...	41,88,878	1,22,088	43,10,966
III.—Tools and Plant ...	5,03,718	2,120	5,05,838
IV.—Suspense ...	.....	.....	.....
Profit and loss ...	.....	.....	.....
Total A. ...	2,32,13,253	6,15,824	2,38,29,077
Deduct—Receipts on Capital Account ...	34,397	638	35,035
Net Total A.—Direct Charges ...	2,31,78,856	6,15,186	2,37,94,042
B.—Indirect Charges.			
Capitalization ...	3,45,512	1,594	3,47,106
Loss by exchange ...	.....	.....	.....
Leave and pension allowance ...	7,57,094	17,092	7,74,186
Total B.—Indirect Charges ...	11,02,606	18,686	11,21,292
Grand Total A+B. ...	2,42,81,462	6,33,872	2,49,15,334

3. The following abstract shows the details of the above :—

		Number of Works.	EXPENDITURE, 1890-91.			Total Expenditure, Direct and Indirect, to end of 1890-91.	Amount of sanctioned Estimates.
			Direct.	Indirect.	Total.		
			Rs.	Rs.	Rs.		
<i>Major Works.</i>							
Protective Works.	{ In operation.	2	2,44,989	8,616	2,53,555	70,37,209	73,26,089
	{ In abeyance.	2	486	17	503	1,01,792	17,42,810
Total ...		4	2,45,425	8,633	2,54,058	71,39,001	90,68,899
Productive Works.	{ In operation.	7	56,402	1,057	57,459	1,05,46,125	1,05,60,945
	{ In abeyance.	1	1,248	39	1,287	1,88,887	1,91,995
Total ..		27	57,552	3,296	60,848	62,28,277	64,60,698
Provincial Minor Works.	{ In operation.	1	2,55,807	5,700	2,61,507	10,01,931*	9,65,328
	{ In abeyance.	1	1,248	39	1,287	1,88,887	1,91,995
Grand Total ...		39	6,15,186	18,686	6,33,872	2,49,15,334	2,70,55,870

*Including expenditure charged to 35—Construction of Protective Irrigation Works.

The number of works in operation is 36, the same as in the previous year. The Chankapur and Maladevi Tanks and the Gokak Canal, 2nd Section, are still in abeyance. An application was made to the Government of India for sanction to resume work on the Chankapur Tank and for an allotment of funds, they having observed in 1884 that they were satisfied that Chankapur Reservoir will prove an invaluable Protective work and it might be commenced when the Mhasvad Tank and Gokak Canal were completed, but they expressed their inability to sanction an allotment from the grant for Protective Works and enquired if this Government were prepared to accept Provincial responsibility for the work. The question is under consideration. The provision of storage for the Pravara River Works is still under enquiry. Rs. 6,33,872 was the total capital outlay during the year, and was incurred principally on the Nira Canal and the Gokak Storage Works. The expenditure on the Nira Canal was mainly on the dam at Bhatghar and to a lesser extent on works in connection with the main canal and its branches. The irrigable area under command of the Nira Canal at the close of the previous year was 134,935 acres. During the year distributary No. 58 was opened for irrigation, bringing an additional area of 792 acres under command, making the total irrigable area 1,35,727 acres. The storage was increased to 3,288 millions of cubic feet, the ultimate full capacity being 5,500 millions.

The Gokak Storage Works were practically completed during the year.

4. The Interest account to end of the year stands as follows :—

	AMOUNT.				AMOUNT.		
	Protective Works.	Productive Works.	Total.		Protective Works.	Productive Works.	Total.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Total Interest charges to end of 1889-90 ...	18,69,357	68,70,680	87,40,037	Net Revenue realized to end of 1889-90 ...	72,123	9,32,947	8,50,924
Do. during 1890-91 ...	2,72,255	4,01,716	6,73,971	Do. during 1890-91 ...	12,304	1,73,955	1,86,259
Total to end of 1890-91 ...	21,41,612	72,72,396	94,14,008	Balance Net Interest Charges to end of 1890-91 ...	59,819	11,06,002	10,46,183
					22,01,431	61,66,394	83,67,825
				Total ...	21,41,612	72,72,396	94,14,008

5. The gross revenue realized from all the sources during the year, under review, after deducting refunds of revenue, (Rs. 1,582) was Rs. 4,60,813, of which Rs. 4,49,388 were direct and Rs. 11,425 indirect receipts. The net revenue actually realized was Rs. 2,21,198.

The gross revenue shows an increase of Rs. 37,954 and the net revenue an increase of Rs. 45,465.

* The gross area under command was 916,753 acres as compared with 915,096 acres in the previous year. The net irrigable area was 535,762 acres as compared with 533,313 acres in the past year, showing an increase of 2,449 acres, of which 792 acres were on the Nira Canal and 1,657 acres were on the Upper Mán River Works.

6. The financial results of the year by main heads were as follows:—

	Areas irrigated.	REVENUE REALIZED.			Working Expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Class I.—Works for which Capital and Revenue Accounts are kept.</i>						
Major Works { Protective Works ...	24,019	55,515	...	55,515	49,211	12,304
{ Productive Works ...	26,565	2,99,345	7,222	3,06,567	1,82,612	1,73,955
Total ...	50,584	3,54,860	7,222	3,62,082	1,75,823	1,86,259
Minor Works ...	*21,469	84,122	4,203	88,325	59,370	28,955
Provincial Minor Works ...	3,843	10,406	...	10,406	4,422	5,984
Total Class I. ...	75,901	4,49,388	11,425	4,60,813	2,39,615	2,21,198

* Includes 1,049 acres on which consolidated assessment is levied.

The area shown as irrigated includes, as observed last year, an area of 1,049 acres on which a consolidated land and water assessment is levied, and which is derived from works on which expenditure on improvements only has been incurred.

7. The figures showing areas irrigated, revenue assessed and realized and working expenses, as compared with former years, are as follows:—

Years.	Area irrigated.	REVENUE		Working Expenses.
		Assessments.	Realizations.	
	Acres.	Rs.	Rs.	Rs.
1882-83 ...	28,735	2,48,714	2,06,174	1,66,870
1883-84 ...	32,962	2,44,247	2,78,130	1,70,089
1884-85 ...	39,656	2,47,702	2,60,080	1,92,612
1885-86 ...	59,450	2,88,232	2,79,877	2,10,686
1886-87 ...	42,628½	3,03,475	3,34,468	2,39,417
1887-88 ...	46,187	3,49,512	3,43,445	2,41,335
1888-89 ...	79,195	4,14,153	3,71,545	2,34,312
1889-90 ...	85,550	4,49,838	4,22,859	2,47,126
1890-91 ...	74,852	4,44,281	4,60,813	2,39,615

There was a falling off in the total area irrigated as compared with the previous year, up to which there had been a steady increase; but it is so far satisfactory to notice that while the decrease in area irrigated is about 12½ per

cent. that in assessment was only about $1\frac{1}{2}$ per cent., and the working expenses show a satisfactory decrease.

The decrease in the area irrigated, 10,698 acres, was distributed over the several classes of works as follows:—

				Acres.
Under Protective Works	the decrease was	...	4,703	
Do. Productive	do. do.	...	1,094	
Do. Minor	do. do.	...	4,571	
Do. Porvincial	do. do.	...	380	
Total Decrease				10,698

Under Protective Works there was a decrease of 5,017 acres on the Nira Canal, and an increase of 314 acres on the Mhasvad Tank. The falling off on the Nira Canal was due to exceptionally favourable rainfall; it is said that such a good rabi season has not been known in the Nira valley for years; there was rainfall towards the end of October, in November, and again just when it was wanted in December. This caused a decrease in nearly all the rabi crops.

Under Productive Works the Hāthmati Canal shows an increase of 1,416 acres, which is the largest area irrigated in any one year since the canal came into operation, and was due to a considerable increase of rabi irrigation caused by a greater demand for water owing to deficient rainfall, and also to more careful distribution of water: this is satisfactory. The Kādwa River works and the Mutha Canals showed a considerable falling off; that on the former was 863 acres and on the latter 2,137 acres.

The decrease in the former case was due to seasonable rainfall, deficient supply in the river during the hot weather, and partly to some want of confidence in the supply available from the Wāghad Tank.

The decrease on the Mutha Canals was solely in the rabi season and was due to very favourable rainfall.

Under Minor Works the falling off was principally on the Khāri Cut, Jāmda and Ojhar Canals. On the Khāri Cut the decrease was 946 acres, on the Jāmda Canals 680 acres, and on the Ojhar Canal 1,399 acres. In the last case it was due to timely and favourable rainfall and in the case of the Jāmda Canals to short supply in the river and favourable monsoon and rabi rainfall.

8. The following table contrasts the distribution of rainfall in each month Distribution of rainfall for the last five years:—

	I.—Works having an unfailing supply.					II.—Works dependent on local rainfall.				
	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
<i>Khariḥ.</i>										
June	6.81	4.38	3.74	2.49	5.54	5.21	3.16	4.03	2.04	4.29
July	5.40	7.18	5.19	4.21	3.32	5.51	5.77	2.76	6.24	2.79
August	2.39	2.65	2.62	1.47	3.08	5.05	3.67	2.20	2.31	3.73
September	2.85	4.81	6.09	9.52	5.00	2.91	6.08	5.42	10.27	4.80
Total	17.51	19.02	17.64	17.69	16.94	18.98	18.68	14.41	20.86	15.61
<i>Rabi.</i>										
October	8.23	3.41	2.49	6.70	3.09	7.44	2.37	1.93	7.03	2.45
November	0.37	4.69	1.55	0.06	2.70	0.48	2.05	3.00	0.12	3.10
December	1.74	0.09	...	...	1.17	1.58	0.10	0.06	...	1.94
January	...	1.34	...	...	...	...	0.99	0.01	...	0.01
Total	10.54	9.53	4.04	6.76	6.96	9.50	5.51	5.00	7.15	7.50
Total Khariḥ and Rabi.	28.05	28.55	21.68	24.45	23.90	28.48	24.19	19.41	28.01	23.11

The rainfall in the year under report was lighter on all the works except those in Khāndesh and Nāsik and some works in Ahmednagar.

The average in the two seasons, taking all the works together, was 22.49 inches as compared with 25.75 in 1889-90.

Distribution of area.

9. The total area irrigated was distributed as follows :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1889-90	44,766	40,784	85,550
1890-91	43,170	31,682	74,852

There is a falling off in both the kharif and rabi areas. The works which show the principal decreases have been referred to in para. 7.

In the kharif season the Bhátodi and Ekrúk Tanks show a considerable increase.

Water was given free to 616 acres on the Níra Canal and to 263 acres on the Mhasvad Tank.

10. The area irrigated was in excess of the area applied for, the figures being 71,099 and 74,852 acres respectively. The difference is due to the fact that the cultivators generally apply for less than they actually irrigate, perhaps from ignorance of what the areas are ; also in some cases because certain lands which are benefitted by percolation are assessed though no applications for such are received.

11. The state of the collections was as follows :—

			Rs.
Balance of demand unrealized at the commencement of the year	...	...	40,550.
Demand of the year—			Rs.
Rabi, 1889-90	...	...	90,686
Kharif, 1890-91	...	...	2,28,307
Miscellaneous receipts	...	...	1,26,161
			4,45,154.
		Total	4,85,704
Remissions ...	...	...	404
		Net Total	4,85,300
Amount unrealized at the close of the year	...	...	34,330
Actual receipts of the year	...	...	4,50,970
Add—			
Share of land revenue	...	...	11,425
			4,62,395
Deduct—			
Refunds of revenue...	...	...	1,582
Revenue realized as per paras. 5, 6 and 7	...	...	4,60,813

The remissions and refunds together amount to Rs. 1,986.

It is satisfactory to notice the considerable decrease in the total amount, Rs. 34,330, unrealized at the close of the year ; this total is made up of the following :—

	Rs.
Mutha Canals	14,460
Krishna Canal	7,555
Lower Pánjhra River works	2,311
Khári Cut	2,225
Kádwa River works	2,190
Mhasvad Tank	1,279
Madag Tank	1,242
Miscellaneous works	3,068
Total Rs...	34,330

Of the balance unrealized from the Mutha Canals Rs. 10,883 are on account of water-supply and have since been recovered.

12. The total working expenses for the year amounted to Rs. 2,39,615 against Rs. 2,47,126 in the previous year, showing a net decrease of Rs. 7,511, distributed as follows :—

				1889-90.	1890-91.	Increase or Decrease.	
				Rs.	Rs.	Rs.	
Major Works—							
Protective Works	...	...		39,392	43,211	+3,819	
Productive Works	...	...		1,40,681	1,32,612	—8,069	
Total				...	1,80,073	1,75,823	—4,250
Minor Works and Navigation				...	62,804	59,370	—3,434
Provincial Minor Works	...	...		4,249	4,422	+173	
Grand Total				...	2,47,126	2,39,615	—7,511

The Protective Works only show a noticeable increase as compared with the previous year. The increase is chiefly on the Nira Canal and is made up of small excesses under all heads of Direct and Indirect charges, which have not been explained. Last year the working expenses on this canal amounted to Rs. 27,107, which gave a rate of Rs. 300 per mile of main canal in operation (90 miles) and Rs. 1·24 per acre irrigated. This year the working expenses were Rs. 30,482, giving a rate of Rs. 321 per mile of main canal in operation (95 miles) and Rs. 1·80 per acre irrigated.

13. The following table contrasts the charges under the principal heads with those of the two previous years :—

		1888-89.	1889-90.	1890-91.
		Ra.	Rs.	Rs.
Works	...	1,221	19	.....
Repairs	...	1,36,280	1,33,922	1,27,002
Establishment	...	69,783	80,111	79,329
Tools and Plant	...	3,379	5,124	3,971
Total in the Public Works Department	...	2,10,668	2,19,176	2,10,302
Collection Charges				
	...	13,877	16,737	18,206
Indirect Charges				
	...	9,767	11,213	11,107
Total	...	2,34,312	2,47,126	2,39,615

The above statement shows a decrease under all heads except "Collection charges," the increase in which of course varies with the realizations.

There has been a fair decrease under 'Repairs', and it is satisfactory to notice the tendency to keep down expenditure under this important head.

The percentage of working expenses on gross assessed revenue was nearly 54 against 55 in the previous year, but owing to the falling off in the area irrigated the rate per acre was Rs. 3·20 against Rs. 2·89 in the previous year.

Detail of working.

14. The following table gives the details of the working expenses of some of the principal works :—

Names of Works.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.		WORKING EXPENSES. TOTAL IN THE PUBLIC WORKS DEPARTMENT.	
		Total Cost.	Per Acre.	Per mile of Main Canal.	Per Acre irrigated.
<i>Canals.</i>	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Canal ...	2-14	1,275	0 1 2	286	1-62
Háthmati Canal ...	2-30	234	0 1 0	293	1-64
Káda River Works ...	3-57	221	0 1 7	267	2-57
Mutha Canals ...	9-82	1,080	0 1 6	*489	*3-84
Krishna Canal ...	8-28	400	0 1 7	310	2-77
Jámda Canals ...	2-36	91	0 1 1	198	5-74
Pravara River Works—Ojhar Canal.	1-93	437	0 2 3	269	1-62
Do. Lákh Canal ...	2-88	71	0 2 7	147	7-80
<i>Tanks.</i>					
Mhasvad Tank ...	1-90	1,069	0 2 5	403	1-57
Ekrúti Tank ...	3-91	492	0 3 0	262	4-83
Bhátodi Tank ...	3-31	101	0 1 3	783	2-82
Mátoba Tank ...	4-21	84	0 0 8	107	0-96
Shirsuphal Tank ...	2-70	57	0 0 11	125	1-56
Bhádálvádi Tank ...	4-68	31	0 0 9	155	2-35
Mhasva Tank ...	2-24	19	0 1 7	219	8-16
Maini Tank ...	4-54	238	0 2 2	523	2-80

* Includes the cost of maintenance of irrigation works only and not that of water-supply to Poona.

The charges on account of the Bhátodi Tank works are higher than usual owing to special repairs.

During the year under report the cost of measurement was greater than in the previous year on the Nira Canal and Ojhar Canal, while the Krishna Canal and the Bhátodi Tank show a reduction; it is important to reduce expenditure under this head, but it is not possible to maintain a uniform rate on all works.

15. The indirect receipts as shown in Statements I—C, IV—C and II—E were Rs. 11,425. If Rs. 22,854 on account of savings to the Military and other Government departments, *i. e.*, the difference between the amount formerly charged to them for water-supply and the amount paid during the year under report to the Irrigation Department be added to this, the indirect receipts amount to Rs. 34,279, and the total earnings of the year to Rs. 4,67,135 as compared with Rs. 4,70,741 in the previous year. Also if Rs. 5,694 *plus* Rs. 41,328 on account of supply to the Poona City = Rs. 47,022, being the difference between the value of water issued from the Mutha Canals at normal rates and the value of water supplied at special reduced rates or gratuitously, be taken credit for in the revenue returns of the work as a book credit, and be added to the above amount, the earnings will be Rs. 5,14,157.

A statement showing the details of the sum of Rs. 22,854 above referred to is attached to the report on the Mutha Canals, as desired by the Government of India.

The question of raising the rates at which Government provide the Poona Municipality with a daily supply of 750,000 gallons of water is under separate consideration.

16. The net assessed revenue of the year, after deducting working expenses, including indirect and all other charges, and neglecting the items amounting to Rs. 69,876, referred to in the preceding paragraph, was Rs. 2,04,666 as compared with Rs. 2,02,712 in 1889-90.

The details of the assessments were as follows :—

	DIRECT REVENUE.			Indirect Revenue.	Total.
	Water-rates.	Other Receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Major Works—					
Protective works	49,767	2,599	52,366	...	52,366
Productive works	1,78,851	1,14,357	2,93,208	7,222	3,00,430
Total	2,28,618	1,16,956	3,45,574	7,222	3,52,796
Minor works	70,877	5,588	76,465	4,203	80,668
Provincial Minor works ...	7,200	3,617	10,817	...	10,817
Grand Total	3,06,695	1,26,161	4,32,856	11,425	4,44,281

17. The water-rates in force during the year are shown in Statement I—F and were the same as in the previous year except on the Nira Canal and the Parsul Tank. On the former revised rates were sanctioned for the period extending from 1st July 1890 to 15th January 1895, and for the latter the water-rates were sanctioned for the first time for a period of three years.

18. The average water-rates per acre of land actually irrigated were :—

	1889-90.	1890-91.
Protective Works	1 38	2 07
Productive Works	6 82	6 73
Minor Works	3 09	3 47
Provincial Minor Works ...	1 75	1 87
All taken together	3 66	4 09

The average rate was higher than in the previous year owing to increases in the higher classes of crops, such as fruits and gardens, rice, ground-nut, &c.

19. The water-rate assessments and other receipts compare with those of the previous year as under :—

	1889-90.	1890-91.
	Rs.	Rs.
Water-rates	3,13,036	3,06,695
Other receipts—		
Plantations	14,641	16,837
Water-power	7,050	7,050
Water-supply to towns ...	90,607	89,357
Miscellaneous	12,939	12,917
	1,25,237	1,26,161
Share of land revenue	11,565	11,425
	1,36,802	1,37,586
	4,49,838	4,44,281

The decrease in the item 'Water-rates' is due to the falling off in the area irrigated. That under 'Water-supply to Towns' occurs on the Mutha Canals and is due to the disconnection of the Sappers and Miners lines at Poona, which are now supplied from the Pashan system. "Plantations" show considerable improvement, the increase being mainly on the Ekrúk Tank, the canals being in close proximity to the large town of Sholápur, where there is a great demand for bábul wood for fuel.

Crop acreages.

20. The principal crop acreages irrigated during 1889-90 and 1890-91 were as follows:—

	1889-90.	1890-91.	Increase or Decrease.
	Acres.	Acres.	Acres.
Gardens and orchards ...	3,025	3,105	+80
Sugarcane ...	7,175	6,769	-406
Wheat ...	12,254	10,343	-1,911
Rice ...	4,384	4,809	+425
Maize ...	2,237	2,457	+220
Jowár ...	17,560	11,417	-6,143
Báji ...	13,325	10,954	-2,371
Gram, &c. ...	6,333	5,332	-1,001
Ground-nut ...	9,480	10,527	+1,047
Condiments... ..	2,405	2,673	+268
Fodder ...	1,867	1,814	-53

The principal crops were:—

	Acres.
Jowár ...	11,417
Báji ...	10,954
Ground-nut ...	10,527
Wheat ...	10,343
Sugarcane ...	6,769

As compared with the previous year there has been a decrease under all these crops except ground-nut, which shows an increase of 11 per cent.

The total estimated value of crops irrigated is shown as Rs. 39,97,695 against Rs. 38,90,146 for the previous year.

There was thus an increase in the estimated value, although the area under crops was smaller than in the previous year: this is explained by the fact that a larger area of the higher classes of crops was irrigated, and is also owing to the circumstance that the value is based generally on the current prices of the various kinds of produce as estimated by the taluka Revenue officials, and the crops are classed according to their state as judged by their appearance on the ground, and the values vary as the demand increases or decreases.

21. In Statement I—E the duty of water on each work, as well as the basis to which the duties were calculated, &c., are shown.

Duty of water. The results vary very much on the different works; but this is to be expected, as the conditions also vary considerably, and in most of the canals it is necessary to maintain a much larger discharge than is necessary for the area under irrigation owing to the bulk of the land irrigated being frequently situated at the tail of the canal at a long distance from the headworks.

Details of the duty obtained on each canal are given in the body of the report and are generally estimated from the daily discharge observations and the known area of the miscellaneous crops under irrigation during the period; the principal results are as follows:—

	DUTY IN ACRES PER CUBIC FOOT PER SECOND.			
	Maximum.	In month of	Minimum.	In month of
Mutha Canals ...	57.15	January ...	38.29	May.
Mátoba Tank ...	109.49	Do. ...	60.64	June.
Shirsuphal Tank ...	105.49	July ...	43.52	May.
Bhádálvádi Tank ...	158.56	September ...	56.98	Do.
Ekrók Tank ...	78.	December ...	20.	Do.
Krishna Canal ...	49.	Do. ...	20.	August.
Revári Canal... ..	300.	January ...	24.	October
Upper Mán River Works ...	75.	December ...	10.	March.
Yorla River Works ...	78.	November ...	16.	Do.
Chikhli Canal ...	96.	July ...	14.	April.
Majni Tank ...	160.	September ...	33.	February.

On the Bhátodi Tank in Ahmednagar District the duty varied on the average from 20 acres to 88 acres in the hot weather, from 75 acres to 258 acres in the monsoon, and from 85 acres to 219 acres in the rabi season.

On the Pálkhed, Wadáli and Ojhar Támbat Canals in the Násik District the duty varied from 30 to 50 acres in the hot weather, from 70 to 200 acres in the monsoon (khariff), and from 80 to 150 acres in the rabi season.

On the Ekrúk Tank, Sholápur District, the quantity of water for the following crops, per acre, was found to be necessary :—

	Cubic feet.
Pánsál rice, <i>i. e.</i> superior, during hot weather	... 290,275 per acre.
Do. do during rainy season	... 178,140 „
Suki sál, <i>i. e.</i> rice inferior	... 24,930 „
Ground-nut	... 45,600 „
Wheat, Bakshi	... 36,230 „

On the Mhasvad Tank, Sholápur District :

	Cubic feet.
Sugarcane	... 405,046·3 per acre.
Ground-nut varied from	... 105,626·8 to 106,481·5 „

On the Ashti Tank, Sholápur District, the gauge operations to determine the duty of a cubic foot of water per second, but for no particular crop resulted in—

<i>Perennial crops.</i>				} Acres per cubic foot per second.
Sugarcane ...	...	...	Plantation.	
91			17	
<i>Eight-monthly.</i>				
Ground-nut	...	...	Chilly.	
181*	...	...	192	
<i>Four months' crops.</i>				
Inferior rice	...	...	Jod wheat.	
149	.	...	135	

The difference in the quantity of water required to mature ground-nut on the Ekrúk Tank and the Mhasvad Tank is due to the fact that on the Mhasvad Canals the crop was grown on shallow loamy soil overlying muram which is porous and through which the water soaks quickly, thereby necessitating frequent waterings. On the other canals less water is required for each watering as the soil is more like that usually found in the Deccan, containing more or less black soil, and is of greater depth.

22. The question of closing or transferring the Koregaon and Muchkundi Tanks is under consideration. The question whether the Asundi Tank should not be struck off the list of Works for which Capital and Revenue Accounts are kept has been raised by the Chief Engineer, Southern Division, and a special report on the work has been submitted. The matter will be dealt with in due course.

PART II.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

23. In the Resolution reviewing the report for 1889-90, Government observed that the report relating to works of this class might with advantage be improved upon so as to afford fuller particulars of the proceedings in reference to them and the measures taken to preserve or improve them. This view was endorsed by the Government of India. Accordingly the reports submitted this year contain a full account of the old works in the several districts and the steps taken to maintain, repair and improve them. The report for the Khándesh Irrigation District is specially interesting. The neglect of duty on the part of the cultivators in the matter of silt clearance and petty maintenance of the channels which devolve on them, and the helplessness of the Revenue authorities and the officers of the Irrigation Department in

compelling the people to do what is needful without some legal powers has been brought to the notice of Government and is receiving consideration.

24. The following shows a comparison of the figures for the year under report with those for 1889-90 :—

	1890-91.	1889-90.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Area irrigated	145,563	145,203	360	...
	Rs.	Rs.	Rs.	Rs.
Revenue Receipts... ..	5,27,369	5,31,793	...	4,424
Expenditure	1,96,256	1,96,228	28	...
Net revenue	3,31,113	3,35,565	...	4,452

The area irrigated shows an increase of 360 acres. The receipts show a decrease of Rs. 4,424, of which Rs. 3,456 was under Share of Consolidated Land Revenue, and Rs. 970 under Miscellaneous Receipts. The total decrease in the Belgaum and Dhárwār districts was Rs. 5,713, the cause of which has not been explained.

25. The following gives some details of expenditure :—

	EXPENDITURE.		COMPARISON.	
	1890-91.	1889-90.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Extensions and Improvements	13,806	2,528	11,278	...
Maintenance and Repairs	39,445	63,820	...	24,375
Establishment	85,383	73,706	11,677	...
Tools and Plant	4,955	3,183	1,772	...
Total	1,43,589	1,43,237	352	...
Share of Collection charges	52,667	52,991	...	324
Total	1,96,256	1,96,228	28	...

The increase under Establishment is almost solely in the Dhárwār District, and is due to the transfer of the Gokák Canal works to the Belgaum Provincial district.

Statement of Canals in the Bombay Presidency, excluding Sind.

Source of Supply of Water.	(7). KADVA RIVER WORKS.							(11) KURURA CANAL.	(12) KHADI CUT.	(13) JAMDA CANALS.		(14) CHAKRA CANAL.	(15) PRAYARA RIVER.	(16) RIVER WARNA AND RAINDAD.	(17) CHURRI CANAL.	(18) GOKA'S CANAL.	REMARKS.
	(1) N/TA CANAL.	(2) HATHMATI CANAL.	(3) PAKHED CANAL.	(4) KADVA RIVER.	(5) WADALI CANAL.	(6) LAKE CANAL.	(7) KADVA RIVER.			(8) KADVA RIVER.	(9) KADVA RIVER.	(10) KADVA RIVER.	(11) KADVA RIVER.	(12) KADVA RIVER.	(13) KADVA RIVER.	(14) KADVA RIVER.	
Minimum discharge per second.	K. 1,218 R. 34 H.W. 3	K. 87 R. 45 H.W. 13	K. 17-36 R. 3-50 H.W. 0-00	K. 3-26 R. 0-67 H.W. 0-00	K. 2-27 R. 4-27 H.W. 1-26	K. 93-64 R. 21-50 H.W. 1-01	K. 1,189-31 R. 48-06 H.W. 30-33	K. 25 R. 15 H.W. 7	K. 25 R. 15 H.W. 7	K. 104-40 R. 33-93 H.W. 5-81	K. 77-99 R. 24-25 H.W. 5-12	K. 41-09 R. 4-00 H.W. 1-58	K. 8-00 R. 20-09 H.W. 9-00	River Nandini and Rainfall.	River Nandini and Rainfall.	River Nandini and Rainfall.	River discharge at the beginning and after the close of the season. The above show the nature of the river supply in which the division between the two official years.
Maximum discharge of canal.	456	191	24-52	3-96	11-58	39-31	66-07	150	150	April and May 1890-91 K. 104-40 R. 33-93 H.W. 5-81 Left Bank. Right Bank. K. 48-14 18-80 R. 51-81 27-40 H.W. 11-19 8-23	50-52	8-07	72-45 R. 52-11	7-60	50-52	50-52	
Average annual rainfall.	22-91	24-97	30-19	10-39	19-20	24-59	20-80	94-39	94-39	25-43	24-17	28-08	27-34	28-08	28-08	28-08	
Gross area commanded.	307,550	44,744	28,882	8,035	3,488	20,913	27,407	17,800	17,800	37,122	23,724	1,871	18,668	1,871	1,871	1,871	
Culturable do.	274,447	28,840	20,280	7,421	2,729	25,536	25,533	12,000	12,000	33,124	21,155	1,478	17,627	1,478	1,478	1,478	
Area irrigable by complete project	227,606	11,336	24,466	6,824	2,433	22,760	25,533	11,500	11,500	33,124	20,088	1,478	16,663	1,478	1,478	1,478	
Do. at present	156,727	8,000	9,837	2,367	2,433	11,280	25,533	11,500	11,500	23,477	14,763	1,478	16,663	1,478	1,478	1,478	
Sanctioned Estimate—																	
Direct charges...	Rs. 48,73,380	4,94,705	2,38,087	14,541	29,771	3,75,189	7,27,547	1,59,727	1,59,727	10,27,228	3,25,902	53,803	9,51,526	53,803	53,803	9,51,526	
Indirect charges...	3,18,435	30,000	15,761	893	1,940	20,277	32,075	11,823	11,823	61,402	22,369	3,612	13,892	3,612	3,612	13,892	
Interest during construction...	11,72,734	2,37,687	2,12,354	2,411	32,150	3,65,298	57,505	...	...	...	...	...	98,069	...	...	98,069	
Total Estimate	Rs. 63,70,549	7,62,392	4,06,402	17,785	63,461	7,06,764	8,46,637	1,71,550	1,71,550	10,88,640	3,48,211	57,415	10,63,387	57,415	57,415	10,63,387	
Expenditure—																	
Direct charges...	Rs. 48,08,923	4,90,925	2,19,348	5,996	27,535	3,52,509	7,95,836	1,62,124	1,62,124	9,78,494	3,07,002	53,803	9,51,526	53,803	53,803	9,51,526	
Indirect charges...	1,44,116	27,562	15,380	178	1,389	19,454	44,458	10,822	10,822	61,480	20,538	3,639	12,905	3,639	3,639	12,905	
Interest during construction...	13,44,094	3,55,202	1,65,650	452	26,267	3,13,127	7,51,102	...	...	...	...	...	1,12,789	...	...	1,12,789	
Total Expenditure	Rs. 63,46,533	8,73,489	4,06,328	6,626	55,621	6,85,090	13,91,416	1,72,946	1,72,946	10,80,424	3,27,540	57,442	10,63,387	57,442	57,442	10,63,387	
Works as now sanctioned—																	
Main Canals, do.	100,1219	21	11	8	8-62	23	254	16	16	39	19	64	28	64	64	28	
Branch Canals, do.	132,2447	25	21	...	...	11	20-25	7	7	75	25	...	12	...	...	12	
Distributaries ...	...	...	...	...	...	...	...	...	...	...	...	...	26-31	...	...	26-31	
Of above—	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Navigable channels ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Works completed at end of 1890-91—																	
Main Canals, Irrigation	954	21	11	1-75	8-62	23	354	16	16	39	19	64	28	64	64	28	
Branch Canals, do.	...	...	...	...	...	...	26-25	7	7	75	21	...	12	...	...	12	
Distributaries ...	...	...	...	...	...	...	...	...	...	...	...	...	26-31	...	...	26-31	
Of above—	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Navigable channels ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

Expenditure of expenditure up to end of 1889-90 on the Government of India, as per instructions contained in the Government of India, dated 18th January 1891, communicated in G.O. No. 10,000, dated 2nd February 1891.

Statement of Reservoir Projects in the

Source of Supply.	(1) Bhāghar Reservoir, Nra Canal.	(2) Mhas- rad Tank.	(3) Lower Panjhra River Works and Mukti Tank.	(4) Kadva River Works (Washed- Tank).	(5) Mutha Reservoir, Lake Fife.	(6) Ekruk Tank.	(7) Hartla Tank.	(8) Mhasva Tank.	(9) Parsul Tank.	(10) Bhādi Tank.	(11) Mātoha Tank.	(12) Kasurdi Tank.
	Yelvandi River and Ghat Catch- ment.	Mān River and Rainfall.	Local Streams.	Kalvan River.	Mutha River and Rainfall.	Adhola River and Rainfall.	Local Streams.	Local Streams.	Parsul River.	Mehedi River.	Nāla, Rainfall and sur- plus water from Mutha Right Bank Canal.	Kasurdi Nāla and Rain- fall.
If supplied by rainfall, { Area of catchment, Sq. miles..	128	480	34.2	29	196.00	159	6.80	18.40	17.33	44.0	10.00	6.00
{ Average annual rainfall .. Inches ..	145	20.26	23.14	(a) 52.26	33.52	22.22	29.63	20.72	21.18	25.11	20.65	17.44
Contents of tanks between levels of surface of full supply level and sill of canal head sluice .. Millions of cubic feet ..	5,500	2,038	343.3	606	(12,679.55 (23,233.30)	3,310	131.9	162.5	118.70	154	229	14.5
Area of surface at full supply .. Acres and decimals.	3,554	4,019.30	569.00	778	(23,620.78 (13,299.24)	4,640	472	421	151	315.73	477.46	37.92
Gross area commanded .. Acres	129,045	13,177	(b) ..	94,087	17,152	584	4,647	2,588	15,126	10,700	597	
Culturable do. .. "	106,214	12,627	(b) ..	49,800	16,941	527	4,075	2,386	13,657	7,133	473	
Area irrigable by complete project .. "	106,214	12,627	(b) ..	55,000	15,340	415	4,075	2,386	12,124	7,133	473	
Do. at present .. "	166,214	12,627	(b) ..	40,500	13,320	415	2,083	97	12,124	7,133	473	
Wells supplied by tanks .. No.	12	..	..	22	..	..	..	..	..	..	..	..
Sanctioned Estimate—												
Direct Charges .. Rs.	(c)	20,24,327	4,44,486	4,67,662	60,53,235	12,28,243	49,890	1,29,813	2,06,686	3,51,767	1,93,000	40,812
Indirect Charges .. "	(c)	1,03,947	22,774	10,835	2,40,697	1,06,687	2,150	10,202	7,613	20,511	17,500	4,773
Interest during construction .. "	(c)	0,56,322	3,48,877	2,11,243	34,30,290	8,00,650	..	..	..	..	..	..
Total, Estimate .. Rs.	(c)	27,84,496	8,16,137	7,91,740	87,24,223	21,35,560	75,040	1,40,015	2,13,609	3,78,278	2,10,500	45,580
Expenditure to end of 1890-01.												
Direct Charges .. Rs.	(c)	19,74,261	4,38,473	4,37,082	60,79,831	12,28,117	47,945	1,20,701	2,00,277	3,52,421	1,88,146	40,812
Indirect Charges .. "	(c)	60,509	22,603	11,661	2,27,299	1,05,289	25,424	10,229	6,887	27,019	12,579	4,773
Interest during construction .. "	(c)	6,52,477	3,48,877	1,24,953	41,50,573	10,27,698	..	..	..	..	..	..
Total, Expenditure .. Rs.	(c)	26,87,247	8,04,953	5,75,696	1,04,54,003	23,61,299	73,362	1,40,930	2,08,984	3,79,451	2,00,725	45,580
Works as now sanctioned—												
Dam (earth or masonry) .. "	Masonry ..	Earth.	Earth ..	Earth ..	Masonry.	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.
Total, Height .. Feet.	64.127 (e) 11.8	79.79	65	95	97.84	76	51½	44	65½	50	48.41	16.00
Canals .. Miles.	M. ft.	27 3,380	..	(g) ..	88	48	..	..	..	4½	..	..
Distributaries .. "	(j) 66½	45	(g) ..	70	..	5.5	7	..	5½	17	1.75	
Works completed at end of 1890-01—												
Dam (height) completed .. Feet.	(i) 91	79.79	65	95	97.84	76	51½	44	65½	50	48.41	16.00
Canals .. Miles.	M. ft.	27 3,380	..	(g) ..	88	48	..	..	..	4½	..	..
Distributaries .. "	(j) 66½	45	(g) ..	67	..	5.5	7	..	5½	17	1.75	

(1) 244.7 is the reduced level
(2) 248.7 is the height to which

A.

Bombay Presidency, excluding Sind.

(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	REMARKS.
Shirur Tank.	Bhadrachal Tank.	Koregaon Tank.	Ashti Tank.	Upper Man River Works (Pugli Tank).	Yerla River Irrigation Works (Nehr Tank).	Máni Tank.	Muchkundi Tank.	Gadikeri Tank.	Dambal Tank.	Medleri Tank.	Madag Tank.	Asundi Tank.	Mávinok Tank.	Gokik Canal, 1st Section, and Storage Works.				
Minor tributary of the Rhina River and Rainfall.	Minor tributary of the Rhina River and Rainfall.	Nála and Rainfall.	Ashti Nála and Rainfall.	Mán River and Rainfall.	Yerla River and Rainfall.	Wanga Nála and Rainfall.	Muchkundi Nála and Rainfall.	Rainfall.	Rainfall.	Medleri Nála and Rainfall.	Kumad-wadi River and Rainfall.	Rainfall.	Rainfall.	Ghat-prabha River.				
23°00	23°00	4°4	92	20°00	59°5	54°00	20	08	43	11	540	23	0°25	1,060				
20°02	20°03	5°06	20°68	21°57	32°64	25°47	22°45	23°07	20°25	23°08	20°13	23°50	20°01	55°00	(a) At Wághad probably 10 per cent. below average of basin.			
360	222	1	1,419	185°240	489°77	185°580	680	27°5	113°664	57°000	54°630	105°600	45°75	701°597				
833°79	335°18	202	2,677	349°4	670°9	380°4	1,060	129	442	160	362	418	170°5	2272°45				
4,500	3,600		17,882	8,443	11,234	4,876	5,570	687	4,596	1,916	2,235	1,800	687	18,668	(b) Information supplied in Statement I--A, the tank being only a feeder			
2,500	2,400	Not known.	16,825	7,623	10,630	4,625	5,417	Not known.	4,525	1,062	1,730	1,800	Not known	17,697				
2,900	2,400		14,476	7,623	10,680	4,625	5,417	460	4,505	1,016	No complete project.	1,800	665	16,663				
2,600	2,400		14,476	7,623	10,080	4,625	5,417	337	4,525	1,052	1,730	1,800	477	16,663				
..	..	..	..	25	18	13	NIL.	None.	Un-certain.	NIL.	NIL.	NIL.	NIL.	None.				
1,91,038	2,14,382	40,731	7,54,250	4,16,341	6,25,539	3,08,009	1,48,200	8,888	61,162	78,327	2,32,203	67,731	27,839	(c) ...				
11,725	14,242	1,318	77,490	28,100	45,926	23,402	17,322	350	3,744	3,468	17,144	12,754	3,923	(c) ...				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	(c) ...				
2,02,768	2,38,724	42,049	8,31,720	4,44,571	6,71,466	3,90,492	1,65,622	9,338	64,006	81,705	2,49,497	89,453	31,817	(c) ...				
1,93,687	2,13,106	37,923	7,47,549	4,06,302	6,00,170	3,60,630	1,40,217	8,915	60,847	78,354	1,01,248	60,741	27,612	(c) ...				
11,924	14,125	1,266	75,384	22,104	42,196	22,812	15,332	364	2,099	2,786	6,860	1,718	3,226	(c) ...				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	(c) ...				
2,05,611	2,37,328	39,189	8,22,983	4,28,406	6,51,376	3,61,038	1,55,549	9,279	62,946	81,149	1,67,598	62,469	30,847	(c) ...				
Earth.	Earth.	3 dams, 1 earthen and the other masonry.	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.	Earth.	Earth.	Earth.	Earth.	Masonry weir.				
54°32	55°00	71 and 16	57°75	58°50	74	57°38	60	20	(f) 42°25	(f) 25°62	100	(f) 33°35	(f) 30°70	25° high, maximum above foundation 28' earth embankment.	(d) Above lowest foundation.			
..	..	32	(h) 27 1/2	17 1/2	28 4/8	31	5 1/2	NIL.	..	..	12	..	..	14 1/2	(e) Above lowest point in river-bed.			
12°5	9°26	..	..	6 1/2	7 4/8	2 1/2	Irrigator's Channel.	..	2	5 1/2	..	5 1/2	Irrigator's Channel.	25° 31'	(f) These are reported by the Executive Engineer for Irrigation, Dhárwár, to be the correct heights.			
54°32	55°00	71 and 16	57°75	58°50	74	57°38	60	20	42°25	25°62	100	33°35	30°70	5'	(g) The tank supplies the Pákhed, Oghar, Tánbat and Wádah canals as noted in Statement I--A.			
..	..	32	(h) 27 1/2	17 1/2	28 4/8	31	5 1/2	NIL.	..	..	12	..	..	2 1/2 miles and Wadgat t. branch 12 miles.	(h) Above sills of undersluices=full height of dam.			
12°5	9°25	..	..	6 1/2	7 4/8	2 1/2	Irrigator's Channel.	..	2	5 1/2	..	5 1/2	Irrigator's Channel.	28° 31'	(i) Contains 32 1/2 miles branch canals.			

of the finished crest of weir, water is annually impounded at end of monsoon by fixing standards and boards on waste weir crest.

I—

Capital Account of Irrigation Works in Deccan

DURING YEAR.										
Name of Work.	Direct Charges.						Indirect Charges.			Grand Total.
	Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
1	2	3	4	5	6	7	8	9	10	11
MAJOR WORKS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
PROTECTIVE WORKS.										
<i>In Operation.</i>										
1. Nira Canal	1,76,345	61,097	1,614	2,39,056	480	2,38,576	...	8,554	8,554	2,47,130
2. Alhasvad Tank	6,332	445	—414	6,363	...	6,363	...	62	62	6,425
Total	1,82,677	61,542	1,200	2,45,419	480	2,44,939	...	8,616	8,616	2,53,555
<i>In progress.</i>										
3. Chankapur Tank	390	125	...	515	...	515	...	17	17	532
4. Mālādevi do.	...	...	...	...	29	—29	...	...	...	—29
Total	390	125	...	515	29	486	...	17	17	503
Total Protective Works	1,83,067	61,667	1,200	2,45,934	509	2,45,425	...	8,633	8,633	2,54,058
PRODUCTIVE WORKS.										
<i>In Operation.</i>										
5. Hāthmati Canal	...	142	...	428	...	428	...	20	20	448
6. Lower Pānjra River Works	286	...	...	454	...	454	...	159	159	4,743
7. Kādva River Works	3,144	1,135	305	4,584	...	4,584	...	80	80	2,366
8. Pravara River Works—Lākh Canal	1,601	575	110	2,286	...	2,286	...	752	752	47,880
9. Mutha Canal	41,738	5,374	—4	47,128	...	47,128	...	46	46	2,022
10. Ekrūk Tank	...	...	...	1,976	...	1,976	...	...	...	...
11. Kristma Canal	1,645	331	...	1,976	...	1,976	...	...	...	...
Total Productive Works	48,434	7,557	411	56,402	...	56,402	...	1,057	1,057	57,459
Total Major Works	2,31,501	69,224	1,611	3,02,336	509	3,01,827	...	9,690	9,690	3,11,517
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
12. Khāri Cut	3,380	1,092	...	4,472	...	4,472	467	153	620	5,092
13. Hartāla Tank	...	...	...	...	...	...	...	...	...	...
14. Mhasva do.	...	...	...	...	...	...	...	...	...	...
15. Jāmda Canals	1,323	427	200	1,950	...	1,950	75	60	135	2,085
16. Parsul Tank	3,853	1,613	—691	4,775	...	4,775	...	226	226	5,001
17. Pravara River Works—Ojhar Canal	1,208	465	59	1,762	...	1,762	...	65	65	1,827
18. Bhātodi Tank	278	87	...	365	...	365	...	12	12	377
19. Matoba do.	...	...	...	...	...	...	...	...	...	...
20. Kāsuri do.	...	...	...	...	...	...	...	...	...	...
21. Shirsūphal do.	1,968	713	...	2,681	...	2,681	...	100	100	2,781
22. Bhādalvādi do.	...	...	...	...	...	...	347	...	347	...
23. Koregon do.	...	25	...	25	...	25	...	3	3	28
24. Ashti do.	7,230	1,593	—29	8,794	...	8,794	...	223	223	9,017
25. Rewāri Canal	692	197	—3	886	...	886	...	28	28	914
26. Upper Mān River Works	1,237	91	...	1,328	...	1,328	705	13	718	2,046
27. Yerla River Irrigation Works	495	111	...	606	...	606	...	16	16	622
28. Chikhli Canal	...	...	...	...	...	...	...	...	...	...
29. Maini Tank	22,432	5,228	—29	27,631	...	27,631	...	732	732	28,363
30. Muchkundi do.	800	229	...	1,029	...	1,029	...	32	32	1,061
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	...	...	...	...	...	...
33. Dāmbal do.	...	...	...	...	...	...	...	...	...	...
34. Medleri do.	...	...	...	...	...	...	...	...	...	...
35. Madag do.	...	...	...	...	...	...	...	...	...	...
36. Asundi do.	...	...	...	...	...	...	...	...	...	...
37. Mavinkop do.	...	...	...	...	...	...	...	...	...	...
Total	44,896	11,871	—463	56,304	...	56,304	1,594	1,663	3,257	59,561
<i>In Abeyance.</i>										
3. Gokāk Canal, 2nd Section	971	277	...	1,248	...	1,248	...	39	39	1,287
Total Minor Works and Navigation	45,867	12,148	—463	57,552	...	57,552	1,594	1,702	3,296	60,848
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
30. Gokāk Canal, 1st Section, and Storage Works	2,14,248	40,716	972	2,55,936	129	2,55,807	...	5,700	5,700	2,61,507
GRAND TOTAL	4,91,616	1,23,088	2,120	6,13,824	638	6,13,186	1,594	17,092	18,686	6,33,872

* Including expenditure charged to S.E.

B.

and Gujarát for and to end of 1890-91.

TO END OF YEAR.

Direct Charges.						Indirect Charges.			Grand Total.
Works.	Establishment.	Tools and Plant.	Total.	Debit Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
38,27,778	9,06,031	1,32,465	48,66,274	7,951	48,58,323	.....	1,44,116	1,44,116	50,02,430
15,71,905	3,40,221	63,708	19,75,784	1,473	19,74,261	7,749	52,760	60,509	20,34,776
53,99,583	12,46,252	1,96,173	68,42,008	9,424	68,32,584	7,749	1,96,876	2,04,625	70,37,209
37,760	17,649	7,361	62,670	106	62,564	.....	3,112	3,112	65,676
20,967	11,600	1,456	34,023	68	33,955	.....	2,161	2,161	36,116
58,727	29,249	8,717	96,693	174	96,519	.....	5,273	5,273	1,01,792
54,58,310	12,75,501	2,04,890	69,38,701	9,598	69,29,103	7,749	2,02,149	2,09,898	71,39,001
3,38,636	90,517	9,060	4,32,213	1,288	4,30,925	7,532	19,880	27,362	5,18,287
3,58,064	72,218	3,228	4,33,510	37	4,33,473	8,432	14,171	22,603	4,56,076
5,35,613	1,38,345	16,563	6,90,521	140	6,90,381	4,316	24,252	28,568	7,18,949
2,64,528	68,701	19,481	3,52,710	201	3,52,509	5,824	13,630	19,454	3,71,963
50,50,048	9,23,589	1,17,453	60,92,000	12,169	60,79,831	52,087	1,75,212	2,27,299	63,07,130
10,07,089	2,12,509	9,713	12,29,311	1,194	12,28,117	62,968	42,321	1,05,289	13,33,406
6,56,209	1,37,965	1,682	7,95,856	...	7,95,856	17,222	27,236	44,458	8,40,314
82,55,787	16,53,154	1,77,180	1,00,86,121	15,029	1,00,71,092	1,58,381	3,16,652	4,75,033	1,05,46,125
1,37,14,097	29,28,655	3,82,070	1,70,24,822	24,627	1,70,00,195	1,66,130	5,18,801	6,84,931	1,76,85,126
1,28,860	31,312	2,133	1,62,305	181	1,62,124	5,330	5,492	10,822	1,72,946
33,437	11,936	2,579	47,952	4	47,948	23,052	2,382	25,434	73,382
1,02,795	26,783	1,129	1,30,707	6	1,30,701	5,026	5,203	10,229	1,40,930
7,77,406	1,88,380	12,729	9,78,515	21	9,78,494	14,518	37,412	51,930	10,30,424
1,51,715	39,715	8,915	2,00,345	68	2,00,277	1,078	6,579	6,667	2,06,934
2,27,973	74,637	4,586	3,07,146	144	3,07,002	5,806	14,732	20,538	3,27,540
2,73,060	70,096	9,335	3,53,111	690	3,52,421	13,023	13,987	27,010	3,79,431
1,49,255	35,982	2,937	1,88,154	8	1,88,146	5,579	7,090	12,669	2,00,725
31,423	8,485	884	40,812	...	40,812	3,079	1,699	4,778	45,590
1,55,825	34,001	2,861	1,93,687	...	1,93,687	5,038	6,786	11,824	2,05,511
1,56,992	53,493	2,621	2,13,106	...	2,13,106	3,882	10,240	14,122	2,27,228
30,044	7,661	218	37,923	...	37,923	.....	1,266	1,266	39,189
6,01,825	1,43,027	5,089	7,52,941	5,392	7,47,549	48,941	26,443	75,384	8,23,933
46,287	9,542	11	55,840	...	55,840	1,066	1,761	2,827	58,667
3,06,588	93,191	6,764	4,06,543	241	4,06,302	4,787	17,317	22,104	4,28,406
5,00,500	1,04,072	6,972	6,11,544	2,365	6,09,179	22,368	19,828	42,196	6,51,375
39,984	13,611	208	53,803	...	53,803	917	2,722	3,639	57,442
2,68,079	98,872	8,215	3,70,166	540	3,69,626	3,074	19,238	22,312	3,91,938
1,11,830	26,360	2,204	1,40,484	267	1,40,217	11,228	4,104	15,332	1,55,549
6,895	1,690	129	8,714	...	8,714	.....	238	238	8,952
7,020	1,755	140	8,915	...	8,915	.....	351	364	9,279
49,262	10,769	878	60,909	62	60,847	.....	2,099	2,099	62,946
61,881	15,324	1,155	78,360	6	78,354	.....	2,795	2,795	81,149
1,26,596	31,841	2,825	1,61,262	14	1,61,248	.....	6,350	6,350	1,67,598
48,805	10,881	1,053	60,741	...	60,741	.....	1,718	1,718	62,459
21,665	5,762	323	27,750	138	27,612	2,083	1,152	3,235	30,847
44,16,592	11,50,188	84,955	56,51,735	10,147	56,41,588	1,79,888	2,17,914	3,97,802	60,39,390
91,051	69,663	14,246	1,74,960	...	1,74,960	740	13,187	13,927	1,88,887
45,07,643	12,19,851	99,201	58,26,695	10,147	58,16,548	1,80,628	2,31,101	4,11,729	62,28,277
7,90,583	1,62,460	24,567	9,77,560	261	9,77,299	348	24,284	24,632	* 10,01,931
1,90,12,273	43,10,966	5,05,838	2,38,29,077	35,035	2,37,94,042	3,47,106	7,74,186	11,21,292	2,49,15,334

Construction of Protective Irrigation Works.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

*Statement showing the Financial Results of Irrigation Works in
Realizations under Main Heads of*

Name of Work.	REVENUE (ACTUAL RECEIPTS).											Revenue	
	Irrigation.			Navigation.	Plantations.	Water-power.	Miscellaneous.	Total.	Refunds of Revenue.	Gross Revenue less Refunds.	Rate		
	Water-rates directly paid.	Share of Land Revenue.	Total.								Director.	Executive.	
1	2	3	4	5	6	7	8	9	10	11	12	13	
MAJOR WORKS.													
Protective Works.													
1. Nira Canal...	34,193	...	34,193	...	937	...	962	36,092	7	36,085	297	5,853	
2. Mhasvad Tank	18,683	...	18,683	...	63	...	684	19,430	...	19,430	120	2,203	
Total	52,876	...	52,876	...	1,000	...	1,646	55,522	7	55,515	417	8,056	
Productive Works.													
5. Hāthmati Canal	6,245	...	6,245	...	925	...	201	7,371	...	7,371	23	206	
6. Lower Pānjhira River Works	8,068	*8,623	14,696	...	288	...	152	15,136	...	15,136	77	1,553	
7. Kadva River Works	8,969	†594	9,563	...	42	...	* 85	9,640	...	9,640	64	1,887	
8. Pravara River Works—Lākh Canal	929	...	929	...	314	...	8	1,251	...	1,251	35	635	
9. Mutha Canals	1,19,548	...	1,19,548	...	1,322	3,600	94,343	2,18,813	1,230	2,17,583	779	20,240	
10. Ekrut Tank	11,828	...	11,828	...	7,481	...	5,510	24,819	...	24,819	134	2,511	
11. Krishna Canal	28,889	...	28,889	...	1,560	...	324	30,773	6	30,767	85	1,061	
Total	1,84,476	7,222	1,91,698	...	11,932	3,600	1,00,573	3,07,803	1,236	3,06,567	1,137	28,093	
Total, Major Works	2,37,352	7,222	2,44,574	...	12,932	3,600	1,02,219	3,63,325	1,243	3,62,082	1,614	36,149	
MINOR WORKS AND NAVIGATION.													
12. Khāri Cut	5,764	...	5,764	...	292	...	230	6,286	...	6,286	41	844	
13. Hartala Tank	152	...	152	...	25	...	783	960	306	654	...	152	
14. Mhasva do.	425	...	425	...	230	...	4	659	...	659	17	513	
15. Jāmda Canals	3,978	...	3,978	...	390	...	43	4,411	...	4,411	85	1,779	
16. Parsul Tank	...	...	...	...	...	...	8	8	...	8	...	140	
17. Pravara River Works—Ojhar Canal	7,838	†76	7,914	...	232	...	22	8,168	...	8,168	58	1,303	
18. Bhātodi Tank	6,067	†146	6,213	...	23	...	179	6,415	...	6,415	36	630	
19. Mātoba do.	8,845	...	8,845	...	101	...	...	8,946	22	8,924	19	364	
20. Kāsuri do.	487	...	487	...	18	...	125	630	...	630	3	48	
21. Shirsuphal do.	3,339	...	3,339	...	66	...	...	3,405	...	3,405	16	322	
22. Bhādvādi do.	3,625	...	3,625	...	59	...	48	3,732	...	3,732	15	305	
23. Koregaon do.	1,073	...	1,073	...	9	...	...	1,087	...	1,087	8	141	
24. Ashi do.	3,903	...	3,903	...	894	...	119	4,916	...	4,916	50	902	
25. Bevāri Canal	5,508	...	5,508	...	28	...	8	5,544	...	5,544	15	231	
26. Upper Mān River Works	7,096	...	7,096	...	45	...	31	7,172	...	7,172	26	274	
27. Yerla River Irrigation Works	8,745	...	8,745	...	566	...	48	9,359	6	9,353	37	415	
28. Chikhli Canal	1,775	...	1,775	...	134	...	...	1,909	...	1,909	...	...	
29. Māini Tank	8,014	...	8,014	...	123	...	61	8,198	5	8,193	27	273	
30. Muchkundi do.	59	...	59	...	16	...	...	75	...	75	...	...	
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...	...	...	
32. Gadikeri do.	...	*1,987	1,987	...	...	...	...	1,987	...	1,987	...	...	
33. Dāmbal do.	838	*666	1,504	...	359	...	...	1,863	...	1,863	2	18	
34. Medleri do.	293	...	293	...	...	...	...	293	...	293	...	...	
35. Madag do.	858	...	858	...	122	...	...	980	...	980	...	...	
36. Asundi do.	327	*472	799	...	...	...	...	799	...	799	1	8	
37. Māvinkep do.	...	*856	856	...	6	...	...	862	...	862	...	...	
Total, Minor Works and Navigation	79,014	4,203	83,217	...	3,738	...	1,709	88,664	339	88,325	456	8,662	
PROVINCIAL.													
Minor Works and Navigation.													
39. Gokak Canal, First Section and Storage Works	6,789	...	6,789	...	167	3,450	...	10,406	...	10,406	39	872	
GRAND TOTAL	3,23,155	11,425	3,34,580	...	16,837	7,050	1,03,923	4,62,395	1,582	4,60,813	2,109	45,683	

* Irrigation share of assessment of the Revenue year 1890-91.
† Enhanced Land Revenue.

N.B.—The division of Establishment charges between Revenue Management and Maintenance is made in accordance with the orders contained

C.

*Deccan and Gujarat for the year ending 31st March 1891.**Revenue and Working Expenses.*

WORKING EXPENSES.																
Management.			Maintenance and Repairs.													
Establishment.		Total Revenue Management.	Establishment.				Works.	Repairs.	Sundries.	Tools and Plant.	Plantations.	Total Cost of Maintenance.	Indirect Charges.	Grand Total, Working Expenses.	Net Revenue.	
Navigation.	Civil Officers.		Direction.	Executive.	Medical.	Total.										
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
...	1,710	7,860	200	3,336	...	4,136	...	14,694	...	500	1,852	21,182	1,440	30,482	5,603	
...	986	3,309	91	1,669	...	1,760	...	6,551	...	49	488	3,843	572	12,729	6,701	
...	2,696	11,169	291	5,605	...	5,896	...	21,245	...	549	2,340	30,030	2,012	43,211	12,304	
...	312	541	116	1,042	...	1,158	...	4,365	132	4	268	5,927	194	6,662	709	
...	1,363	2,998	50	1,011	...	1,061	...	3,843	...	200	400	5,504	377	8,879	6,257	
...	449	2,400	24	709	...	733	...	2,791	...	100	142	3,766	376	6,542	3,098	
...	47	717	28	494	...	522	...	1,746	...	102	344	2,714	167	3,598	-2,347	
...	5,955	26,974	348	9,041	...	9,389	...	36,889	...	1,651	666	48,595	4,237	79,826	1,37,577	
...	621	3,266	98	1,820	...	1,918	...	6,921	69	191	820	9,919	639	13,824	10,995	
...	1,906	3,052	140	1,737	...	1,877	...	6,956	403	18	552	9,806	423	13,281	17,486	
...	10,658	39,948	804	15,854	...	16,658	...	63,511	604	2,266	3,192	86,231	6,433	1,32,612	1,73,955	
...	13,354	51,117	1,095	21,459	...	22,554	...	84,756	604	2,815	5,532	1,16,261	8,445	1,75,823	1,86,259	
...	288	1,173	25	523	...	548	...	2,179	...	24	13	2,764	201	4,138	2,148	
...	45	197	3	21	...	24	...	97	...	...	...	121	25	343	311	
...	21	551	6	187	...	193	...	610	...	39	163	1,005	101	1,657	-998	
...	194	2,058	51	1,084	...	1,135	...	4,555	...	150	...	5,840	420	8,318	-3,907	
...	...	140	...	...	...	...	...	...	...	...	...	...	20	160	-152	
...	389	1,750	32	719	...	751	...	2,360	...	...	646	3,757	296	5,803	2,365	
...	312	978	31	536	...	557	...	1,716	...	73	513	2,859	171	4,008	2,407	
...	442	825	13	253	...	266	...	980	...	100	83	1,429	91	2,345	6,579	
...	24	75	2	34	...	36	...	143	...	50	...	229	12	316	314	
...	167	505	11	215	...	226	...	313	...	100	91	1,230	79	1,814	1,591	
...	181	501	11	207	...	218	...	193	...	100	80	1,191	75	1,767	1,965	
...	54	203	5	102	...	107	...	427	...	...	...	534	36	773	314	
...	152	1,104	40	710	...	750	...	2,715	...	59	285	3,809	238	5,151	-235	
...	273	519	17	250	...	267	...	1,014	...	10	56	1,347	72	1,938	3,606	
...	353	653	67	711	...	778	...	2,832	...	29	260	3,919	161	4,723	2,449	
...	437	889	81	899	...	980	...	3,401	...	142	519	5,042	200	6,131	3,222	
...	89	89	15	102	...	117	...	480	...	50	30	677	16	782	1,127	
...	401	701	81	824	...	902	...	3,411	...	30	200	4,543	168	5,412	2,781	
...	3	3	8	54	...	62	...	220	...	...	49	331	9	343	-268	
...	...	...	1	3	...	4	...	18	...	...	...	22	1	23	-23	
...	199	199	...	...	...	...	...	...	...	...	...	...	...	199	1,768	
...	108	128	12	102	...	114	...	456	...	...	...	570	19	717	1,146	
...	15	15	14	96	...	110	...	478	...	...	...	588	15	618	-325	
...	43	43	25	167	...	192	...	647	...	...	186	1,025	27	1,095	-115	
...	64	73	14	111	...	125	...	490	...	...	...	615	19	707	92	
...	86	86	...	1	...	1	...	2	...	...	...	3	...	89	773	
...	4,340	13,458	565	7,898	...	8,463	...	30,857	...	956	3,174	43,450	2,462	50,370	28,955	
...	512	1,423	23	497	...	520	...	1,770	...	200	309	2,799	200	4,422	5,984	
...	18,206	65,993	1,683	29,854	...	31,537	...	1,17,383	604	3,971	9,015	1,62,510	11,107	2,39,615	2,21,198	

II—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarat for the year ended 1890-91, based on Actual Receipts.

Principal Results of Operations for the year ended 31st March 1891.

Irrigation Works.	Direct and Indirect Capital Outlay to end of 1890-91.	Gross Receipts, Direct and Indirect, from all sources.	Working Expenses, Direct and Indirect.	Net Revenue (excluding charges for interest).	Interest at 4 per cent. on Direct Capital Outlay at commencement of year and at 2 per cent. on Outlay during year.	Surplus Revenue after paying interest on Direct Capital Outlay.		Excess Charges, including interest, on Direct Capital Outlay.	
						Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.
1	2	3	4	5	6	7	8	9	10
MAJOR WORKS.									
PROTECTIVE WORKS.									
<i>In Operation.</i>									
1. Nira Canal	50,02,489	36,085	30,482	5,603	1,89,561	...	...	1,89,568	2'96
2. Mhasvad Tank	20,34,779	19,430	12,729	6,701	78,843	...	...	72,142	2'73
Total	70,37,268	65,515	43,211	12,304	2,68,404	...	...	2,66,100	2'89
<i>In Progress.</i>									
3. Chankapur Tank	65,676	.....	.....	.....	2,492	...	...	2,492	2'88
4. Maldevi do.	30,116	.....	.....	.....	1,359	...	...	1,359	3'14
Total	1,01,792	.....	.....	.....	3,851	...	...	3,851	2'06
Total, Protective Works	71,39,061	55,515	43,211	12,304	2,72,255	...	...	2,69,951	2'90
PRODUCTIVE WORKS.									
<i>In Operation.</i>									
5. Hithamal Canal	5,18,297	7,371	6,662	709	19,697	...	...	19,298	2'04
6. Lower Panjurn River Works	4,56,076	15,356	8,973	6,387	17,300	...	...	11,073	1'59
7. Kadva River Works	7,18,640	9,640	6,642	3,008	27,524	...	...	24,420	2'43
8. Pravara River Works—Lakh Canal	3,71,903	1,231	3,508	—2247	14,055	...	...	16,402	2'19
9. Mutha Canal	63,07,140	2,17,593	79,826	1,37,757	48,124	...	...	1,04,491	1'16
10. Ekroti Tank	12,35,416	24,819	13,224	10,005	31,125	...	...	35,120	1'65
11. Krishna Canal	8,40,314	30,767	18,281	17,496	31,795	...	...	14,360	0'93
Total, Productive Works	1,05,46,128	3,06,567	1,32,612	1,73,955	4,01,716	...	...	2,27,761	1'83
Total, Major Works	1,76,85,126	3,62,082	1,75,823	1,86,259	6,73,971	...	...	4,97,712	1'92
MINOR WORKS AND NAVIGATION.									
<i>In Operation.</i>									
12. Khatri Cut	1,72,046	6,286	4,138	2,148	6,396	...	...	4,248	1'95
13. Hariata Tank	654	654	343	311	1,918	...	...	1,367	1'88
14. Mhasva do.	1,40,030	669	1,667	—993	6,328	...	...	6,230	2'89
15. Jambda Canal	10,30,424	4,411	8,418	—3,907	39,101	...	...	43,008	2'43
16. Farad Tank	2,06,054	8	160	—152	7,916	...	...	8,068	3'29
17. Pravara River Works—Ojhar Canal	3,37,540	8,168	5,908	2,260	12,945	...	...	9,880	1'56
18. Bhadodi Tank	3,79,431	6,415	4,008	2,407	14,058	...	...	11,652	1'60
19. Matoba do.	2,00,725	8,924	2,345	6,579	7,530	...	...	947	0'96
20. Kasurdi do.	46,599	630	316	314	1,631	...	...	1,319	1'45
21. Sisuphal do.	2,05,311	3,405	1,814	1,591	7,094	...	...	6,103	2'13
22. Bhadavadi do.	2,27,228	3,702	1,767	1,935	8,624	...	...	6,599	2'09
23. Korogon do.	39,130	1,087	773	314	1,618	...	...	1,308	2'05
24. Ashli do.	8,22,933	4,910	5,121	—235	27,736	...	...	29,061	2'58
25. Revari Canal	58,607	5,591	1,938	3,694	1,300	1'27	...	...	...
26. Upper Nán River Works	4,28,406	7,172	4,723	2,449	16,225	...	...	13,776	2'14
27. Yerla River Irrigation Works	6,51,975	9,365	6,131	3,232	24,355	...	...	21,123	3'12
28. Chikhli Canal	57,442	1,060	732	1,127	2,132	...	...	1,025	0'92
29. Maini Tank	3,91,938	8,193	5,412	2,781	14,232	...	...	11,451	1'92
30. Muckundi Tank	1,56,549	343	343	—268	5,554	...	...	5,506	2'91
31. Nilgund do.	8,972	.....	23	—23	239	...	...	372	3'19
32. Gadikeri do.	9,279	1,987	199	1,788	357	1,481	...	...	...
33. Dámbal do.	62,946	1,363	717	1,146	2,434	...	...	1,283	1'47
34. Mederi do.	21,140	203	618	—225	3,114	...	...	3,459	3'99
35. Madag do.	1,67,508	980	1,095	—115	9,450	...	...	6,565	1'98
36. Asundi do.	62,459	799	707	92	2,489	...	...	2,338	2'91
37. Mávinop do.	30,847	862	80	773	1,104	...	...	351	0'69
Total	60,39,980	88,325	59,370	23,955	2,24,538	...	...	1,95,583	2'05
<i>In abeyance.</i>									
38. Gokák Canal, 2nd Section	1,88,887	.....	.....	.....	6,973	...	...	6,973	2'92
Total, Minor Works and Navigation	62,28,277	88,325	59,370	28,955	2,31,511	...	...	2,02,556	2'07
PROVINCIAL.									
MINOR WORKS AND NAVIGATION.									
<i>In Operation.</i>									
39. Gokák Canal, First Section, and Storage Works.	10,01,931	10,400	4,422	5,984	33,976	...	...	27,992	2'48
GRAND TOTAL	2,49,15,234	4,60,813	2,39,615	2,21,198	9,38,456	...	...	7,13,240	5'57

* The sum at charge being minus, no percentage can be calculated.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

III—C.

Demands and Realizations during the year 1890-91 in Deccan and Gujarát.

Irrigation Works.	Balance of Demands unrealized at commencement of year.	DEMANDS OF THE YEAR.				Total, including Balance at commencement of year.	Deduct Remissions not including Cash Refunds.	Net Total.	Deduct Amount unrealized at close of year.	Actual Realizations of the year.
		Rabi, 1889-90.	Kharif, 1890-91.	Miscellaneous Receipts.	Total.					
1	2	3	4	5	6	7	8	9	10	11
MAJOR WORKS.										
<i>Protective Works.</i>										
1. Nira Canal	—5	16,213	18,099	1,899	36,211	36,206	...	36,206	114	36,092
2. Mhasvad Tank	6,157	4,804	8,748	700	14,252	20,799	...	20,708	1,279	19,430
Total	6,452	21,017	26,847	2,599	50,403	56,915	...	56,915	1,393	55,522
<i>Productive Works.</i>										
5. Hathnadi Canal	246	2,842	3,727	1,126	7,695	7,941	...	7,941	570	7,371
6. Lower Pánjhra River Works	122	(5)4,522	6,735	440	10,697	10,819	...	10,819	2,311	8,508
7. Kádra River Works	2,135	2,380	6,122	99	9,101	11,236	...	11,236	2,180	9,046
8. Pravara River Works— Láth Canal	16	144	801	322	1,267	1,283	...	1,283	32	1,251
9. Mutha Canals	21,281	14,124	1,00,999	97,158	2,12,281	2,23,562	289	2,23,273	14,489	2,12,813
10. Ekruk Tank	791	4,067	7,733	13,338	25,068	25,659	...	25,359	1,040	24,319
11. Krishna Canal	(2)5,519	7,364	28,630	1,884	32,378	33,397	69	33,328	7,555	30,773
Total	30,110	35,883	1,48,747	1,14,357	2,98,987	3,29,097	358	3,29,739	28,158	3,00,581
Total, Major Works	36,562	56,900	1,75,594	1,16,956	3,49,450	3,86,012	358	3,86,654	29,551	3,56,103
MINOR WORKS AND NAVIGATION.										
12. Khári Cut	1,003	8	6,078	522	6,608	8,511	...	8,511	2,225	6,286
13. Hartale Tank	• 190	124	6	777	907	1,007	44	963	8	960
14. Mhasva do.	...	381	73	234	688	688	...	688	29	659
15. Jámda Canals	389	2,748	1,086	493	4,263	4,651	2	4,649	238	4,411
16. Parvel Tank	...	(c)...	...	8	8	8	...	8	...	8
17. Pravara River Works— Qjhar Canal	86	4,719	3,086	339	8,134	8,220	...	8,220	128	8,092
18. Bhátodi Tank	31	2,982	3,227	302	6,491	6,511	...	6,512	243	6,269
19. Mátoba do.	...	2,509	6,336	101	8,946	8,946	...	8,946	...	8,946
20. Kásurdi do.	...	449	38	143	630	630	...	630	...	630
21. Shirsuphal do.	...	1,761	1,578	66	3,405	3,405	...	3,405	...	3,405
22. Dhádalvadi do.	20	1,122	2,503	107	3,732	3,732	...	3,732	20	3,732
23. Koregaon do.	...	683	390	9	1,087	1,087	...	1,087	...	1,087
24. Ashti do.	924	1,469	1,330	1,010	4,400	5,324	...	5,324	408	4,916
25. Revári Canal	77	3,267	2,172	86	5,476	5,552	...	5,552	8	5,544
26. Upper Man River Works	54	2,470	4,608	76	7,154	7,308	...	7,308	86	7,172
27. Yerla River Irrigation Works	124	3,511	5,172	614	9,297	9,421	...	9,421	62	9,359
28. Chikhli Canal	3	234	1,486	134	1,964	1,967	...	1,967	48	1,909
29. Maini Tank	298	1,614	6,212	134	8,010	8,279	...	8,279	61	8,198
30. Muehkundi do.	...	...	59	16	75	75	...	75	...	75
31. Kulgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	...	...	...	...	...	...
33. Dámbal do.	...	337	437	359	1,193	1,193	...	1,193	—4	1,197
34. Madleri do.	...	31	262	...	293	293	...	293	...	293
35. Madag do.	12	753	1,335	122	2,210	2,222	...	2,222	1,242	980
36. Asundi do.	...	64	263	...	327	327	...	327	...	327
37. Mávinkop do.	...	...	...	6	6	6	...	6	...	6
Total, Minor Works and Navigation	3,992	31,237	43,397	5,588	85,232	89,274	46	89,228	4,767	84,461
PROVINCIAL.										
<i>Minor Works and Navigation.</i>										
9. Gokák Canal, 1st Section, and Storage Works	—4	2,489	4,816	3,617	10,422	10,418	...	10,418	12	10,406
GRAND TOTAL	40,550	90,656	2,23,307	1,26,161	4,45,154	4,85,704	404	4,85,300	34,330	4,50,970

(a) Includes Rs. 136 omitted from the demands of the previous years—*Vide* Canal Return No. VII of 1890-91, received from the Hon'ble Deputy Collector, Sátara.

(b) Including Rs. 1,672 on account of rabi of 1890-91, shown in Canal Return No. IX.

(c) Water supplied for irrigation, but the question of assessing water-rates is under reference.

M. R. HUTCHINSON,
Examiner, Public Works Accounts,

IV—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujardt for the year ended 1890-91, based on the Assessment of the year.

Principal Results and Operations for the year ended 31st March 1891.

Irrigation Works.	Capital Outlay (Direct and Indirect) to end of year.	REVENUE ASSESSED DURING THE YEAR.								Indirect Revenue—(Land Revenue due to Operation of Canal).	Grand Total.	Working Expenses, Direct and Indirect.	Net assessed Revenue of the year.	Percentage on Capital Outlay to end of year.
		Direct assessed Revenue.*												
		Occupier's rate.	Owner's rate.	Plantations.	Water-power.	Navigation.	Miscellaneous.	Total.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
MAJOR WORKS.														
Protective Works.														
1. Nira Canal	50,09,439	30,225	...	937	...	...	962	33,125	...	33,125	30,452	7,643	0.15	
2. Mhasvad Tank	20,84,770	13,541	...	63	...	...	637	14,241	...	14,241	12,729	1,512	0.07	
Total	70,37,209	49,767	...	1,000	...	...	1,599	52,366	...	52,366	43,211	9,155	0.13	
Productive Works.														
5. Hathmati Canal	5,13,287	8,674	...	925	...	...	201	9,800	...	9,800	8,662	3,138	0.51	
6. Lower Panchra River Works ...	4,56,076	8,036	...	238	...	...	157	8,526	16,628	16,164	8,879	6,275	1.33	
7. Kadva River Works	7,18,949	7,946	...	42	...	...	57	8,045	1594	8,639	6,542	2,097	0.29	
8. Pravara River Works—Lakh Canal	3,71,963	1,250	...	314	...	...	8	1,572	...	1,572	3,598	2,026	0.54	
9. Mutha Canals	63,07,130	1,10,000	...	1,322	3,600	...	92,336	2,07,153	...	2,07,158	70,336	1,27,332	2.02	
10. Ekrik Tank	13,33,406	10,188	...	7,431	...	...	5,847	23,515	...	23,516	13,524	9,992	0.73	
11. Krishna Canal	8,40,314	32,707	...	1,560	...	...	324	34,891	...	34,591	13,281	21,310	2.54	
Total	1,05,46,125	1,78,851	...	11,932	3,600	...	98,825	2,93,208	7,222	3,00,430	1,32,612	1,67,818	1.59	
Total, Major Works	1,75,83,334	2,28,619	...	12,932	3,600	...	1,00,424	3,46,574	7,222	3,52,796	1,75,823	1,76,973	1.00	
MINOR WORKS AND NAVIGATION.														
12. Khari Cut	1,72,946	6,078	...	292	...	...	236	6,600	...	6,600	4,138	2,462	1.42	
13. Hardla Tank	73,382	132	...	25	...	...	732	899	...	899	343	556	0.76	
14. Mhasra do	1,40,930	422	...	330	...	...	4	656	...	656	1,637	1,001	0.71	
15. Janda Canals	10,30,424	3,167	...	390	...	...	43	3,600	...	3,600	8,318	4,718	0.46	
16. Parsul Tank	2,06,034	...	...	...	...	...	8	8	...	8	190	152	0.07	
17. Pravara River Works—Ojhar Canal	3,27,540	6,115	...	232	...	...	27	6,444	176	6,520	5,508	717	0.22	
18. Bhatodi Tank	3,79,431	4,143	...	23	...	...	279	4,445	1146	4,591	4,003	588	0.15	
19. Makoba do	2,00,723	1,913	...	101	...	...	...	8,014	...	8,014	2,315	5,699	2.82	
20. Karsudi do	45,590	308	...	13	...	...	125	451	...	451	316	133	0.29	
21. Shiruphal do	2,05,511	2,712	...	66	...	...	...	2,778	...	2,778	1,814	964	0.47	
22. Bhadaivdi do	2,27,238	3,009	...	59	...	...	45	3,115	...	3,115	1,707	1,399	0.59	
23. Koregaon do	32,189	500	...	9	...	...	...	599	...	599	773	174	0.44	
24. Ashti do	3,32,933	3,234	...	384	...	...	116	4,294	...	4,294	5,151	857	0.10	
25. Revari Canal	58,607	4,998	...	23	...	...	...	5,034	...	5,034	1,923	3,096	0.28	
26. Upper Man River Works ...	4,25,406	5,859	...	45	...	...	31	5,932	...	5,932	4,723	1,208	0.23	
27. Yerla River Irrigation Works	6,51,875	8,478	...	566	...	...	48	9,062	...	9,062	6,131	2,931	0.45	
28. Chikhli Canal	57,442	1,844	...	134	...	...	...	1,978	...	1,978	732	1,199	0.28	
29. Maini Tank	3,91,938	7,635	...	123	...	...	61	8,019	...	8,019	5,412	2,607	0.37	
30. Muchkund Tank	1,53,549	64	...	18	...	...	...	80	...	80	343	263	0.17	
31. Nilgund do	8,972	...	...	...	...	...	...	...	...	...	23	23	0.26	
32. Godhari do	9,279	...	...	...	...	...	...	...	11,987	11,987	329	1,738	19.77	
33. Dambal do	62,046	636	...	359	...	...	...	995	1,686	1,681	717	944	1.49	
34. Medleri do	81,149	345	...	...	...	...	...	345	...	345	618	273	0.33	
35. Madag do	1,67,598	2,818	...	122	...	...	...	2,740	...	2,740	1,065	1,645	0.98	
36. Asundi do	62,459	340	...	...	...	...	...	340	1473	812	707	105	0.17	
37. Mavinkop do	30,247	...	...	8	...	...	...	8	1856	862	89	773	2.51	
Total, Minor Works and Navigation ...	60,89,390	70,877	...	3,738	...	...	1,850	76,465	4,203	80,668	59,370	21,298	0.36	
PROTECTORIAL.														
Minor Works and Navigation.														
38. Gokak Canal, First Section, and Storage	10,01,831	7,200	...	187	3,450	...	...	10,817	...	10,817	4,422	6,395	0.64	
GRAND TOTAL	2,46,34,655	3,06,635	...	16,837	7,050	...	1,02,274	4,32,856	11,425	4,44,281	2,39,615	2,04,666	0.33	

* Irrigation share of the land revenue assessment.

† Excluding remissions and free grants shown in Canal Returns No. V for khairif and rabicasons of 1890-91.

‡ Enhanced land revenue.

§ Excluding Rs. 140, being loss to the work on account of difference between the assessments and the "judi" on infam land.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

Statement of Areas irrigated by Irrigation Works in the Bombay Presidency, excluding Sind, during the year 1898-91.

xxiii

AREAS IRRIGATED IN ACRES.										AVERAGE DISCHARGES, CUBIC FEET PER SECOND.				AREA IRRIGATED PER CUBIC FOOT PER SECOND.				DATE TO WHICH THE DUTIES OF WATERS ARE CALCULATED.		REMARKS.																			
No.	Name of Canal.	Kharif.	Rabi.	Total.	Flow.	Lift.	Double-cropped.		At Head.		Utilized.		Discharged at Head.		Utilized.																								
							Area irrigated.	Percent of Total Area.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.																							
1	W. S.	3	4	6	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																				
MAJOR WORKS.																																							
1	Nira Canal	8,920	7,993	16,913	10,877	38	...	...	144	166	117	143	81.94	48.15	76.24	56.29	16th October to 15th January.	16th October to 15th January.	* Includes 616 acres for which water was given from April to November.																				
2	Masur Canal	4,081	5,025	9,106	7,081	76	1,152	10,21	51.81	64.18	46.99	67.72	79.89	47.16	88.54	52.41	16th October to 15th January.	16th October to 15th January.	1283 acres received water free.																				
Total																					13,001	13,018	26,019	25,868	111	1,152	...	...	...	...	...	...	...	...	...	...	...	...	
Productive Works.																																							
5	Khadwa River Works	1,062	2,509	3,570	3,793	84	...	...	69	76	31	37	14.22	33.99	40.84	67.56	1st June to 30th September.	1st June to 30th September.																					
6	Lower Pravara River Works	1,166	2,624	3,790	3,586	4	129	...	35.8	4.49	...	...	48.31	183.42	40.31	183.42	1st June to 30th September.	1st June to 30th September.																					
7	Khadwa River Works	1,128	603	1,731	1,666	46	63	4.79	16.83	7.93	...	...	6.52	68.74	38.09	142.94	106.24	16th October to 1st March.	16th October to 1st March.																				
8	Pravara River Works	141	152	293	103	...	...	...	223	178	...	...	9.98	63.23	29.21	101.93	68.42	16th October to 1st March.	16th October to 1st March.																				
9	Mutha Canal	148	156	304	301	...	...	...	3.60	3.60	...	...	2.15	34.34	18.14	68.83	78.28	16th October to 1st March.	16th October to 1st March.																				
10	Bhikh Tank	7,236	3,465	10,701	11,123	68	910	5.12	159.68	138.67	...	...	Not obtainable	...	...	...	...	16th October to 1st March.	16th October to 1st March.																				
11	Krishna Canal	1,885	2,993	4,878	3,776	23	255	9.93	33.09	27.25	...	...	31.77	55.48	28.00	67.77	29.38	16th October to 1st March.	16th October to 1st March.																				
Total																					15,795	10,770	26,565	25,744	820	1,976	...	...	...	...	...	...	...	...	...	...	...	...	
MAJOR WORKS AND NAVIGATION.																																							
12	Kharai Cut	1,325	78	1,403	1,321	64	...	...	21.51	0.77	20.42	...	81.80	75.32	64.65	75.32	1st Nov. to end of February.	1st Nov. to end of February.	Besides this water is used for 322 acres of land on the Ghafola tank which has not yet been received water free.																				
13	Hathani Canal	2	172	174	60	...	...	...	0.93	0.77	0.98	...	25.00	25.00	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
14	Pravara Canal	241	1,209	1,450	1,345	...	...	...	0.83	0.87	0.63	...	284.12	269.77	234.13	269.77	1st Nov. to end of February.	1st Nov. to end of February.																					
15	Pravara River Works - Other Canal	1,687	1,795	3,482	3,154	8	173	43.00	37.84	26.25	...	20.71	34.58	61.48	61.48	61.48	1st Nov. to end of February.	1st Nov. to end of February.																					
16	Pravara River Works - Other Canal	1,167	1,795	2,962	2,929	17	108	10.94	8.94	10.96	...	8.94	146.02	65.05	146.02	65.05	1st Nov. to end of February.	1st Nov. to end of February.																					
17	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
18	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
19	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
20	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
21	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
22	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
23	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
24	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
25	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
26	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
27	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
28	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
29	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
30	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
31	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
32	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
33	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
34	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
35	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
36	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
37	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
38	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
39	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
40	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
41	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
42	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
43	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
44	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
45	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
46	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
47	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
48	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
49	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
50	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
51	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
52	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
53	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
54	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
55	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
56	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
57	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
58	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
59	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
60	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
61	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
62	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
63	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
64	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
65	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
66	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
67	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
68	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
69	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
70	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
71	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
72	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
73	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
74	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
75	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					
76	Kharai Tank	1,27	117	129	114	114	...	...	...	...	...	...	...	...	...	...	1st Nov. to end of February.	1st Nov. to end of February.																					

II—E.

Statement showing Incidence of Working Expenses and Assessed Water Revenue on Canals in the Bombay Presidency, excluding Sind, during the year 1890-91.

No.	Name of Work.	WATER-RATE ASSESSED.				Gross assessed Revenue from sources.	Working Expenses, Direct and Indirect, year 1890-91.	Acres irrigated during the year 1890-91.	WORKING EXPENSES.			OCCUPANCY RATE.			TOTAL WATER-RATE, DIRECT AND INDIRECT.		REMARKS.
		Owner's.	Total Direct.	Indirect.	Rs.				Bs.	Pais.	Per Acre irrigated.	Rs.	Bs.	Pais.	Per Acre irrigated.	Rs.		Bs.	Per Cubic Foot per Second at Canal Head.	Per Acre irrigated.	Per Cubic Foot per Second at Canal Head.
1	Nira Canal	36,226	..	..	..	36,226	20,482	16,013	89	1,720	262	2,14	230,91	271	229,91	..	Checked on Rs. 45,000 the amount deductible to the maintenance of irrigation.
2	Musavir Tank	15,341	..	..	..	15,341	13,641	7,106	80	1,719	240	2,14	256	1,30	256	..	
	Total	40,767	..	..	..	40,767	48,211	24,019	83	1,960	..	2,17	..	2,07	..	..	
5	Hishmat Canal	8,674	..	..	..	8,674	6,063	2,706	68	1,765	107,45	2,00	139,90	230	139,90	..	Checked on Rs. 45,000 the amount deductible to the maintenance of irrigation.
6	Lower Pambra River Works	6,086	..	..	..	6,086	5,870	2,369	40	8,71	2,069	3,58	1,850	6,16	3,428	..	
7	Karim River Works—Other Tank	6,302	..	..	..	6,302	4,407	1,733	60	7,02	343	3,08	619	4,02	668	..	
8	Prepara River Works—Lahar Canal	1,250	..	..	..	1,250	1,447	433	226	2,39	206	2,98	72	3,58	472	..	
9	Mulla Canal	1,10,000	..	..	..	1,10,000	79,829	11,201	330	9,84	553	9,92	769	9,92	769	..	
10	Krishna Canal	32,707	..	..	..	32,707	32,707	3,334	38	5,30	470	3,91	347	8,28	828	..	
	Total	1,78,951	..	..	..	1,78,951	1,86,073	26,365	44	4,70	..	6,73	..	7,00	..	..	
	Total, Major Works	2,28,018	..	..	..	2,28,018	1,75,233	50,031	60	3,47	..	4,52	..	4,66	..	..	
12	Ritari Cut	6,078	..	..	..	6,078	4,138	1,326	63	5,72	550,49	4,58	809,22	4,58	809,22	..	Water-rates not assessed yet.
13	Garada Tank	132	..	..	..	132	1,343	1,343	38	8,51	1,427	2,24	491	1,91	530	..	
14	Jamda Tanks	3,467	..	..	..	3,467	3,094	406	200	8,09	809	2,30	118	2,30	118	..	
15	Parad Tank	1,115	..	..	..	1,115	4,091	1,331	87	2,21	2,247	4,21	823	4,21	823	..	
16	Prepara River Works—Other Canal	7,913	..	..	..	7,913	8,014	1,331	87	2,21	2,247	4,21	823	4,21	823	..	
17	Mulla do.	2,718	..	..	..	2,718	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
18	Shiruphal do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
19	Bhadravadi do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
20	Karnal do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
21	Asahi do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
22	Shiruphal do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
23	Bhadravadi do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
24	Koregon do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
25	Asahi do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
26	Shiruphal do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
27	Bhadravadi do.	3,000	..	..	..	3,000	3,110	1,44	70	2,21	2,247	4,21	823	4,21	823	..	
28	Upper Main River Works	4,008	..	..	..	4,008	4,008	1,331	87	2,21	2,247	4,21	823	4,21	823	..	
29	Yardi River Irrigation Works	5,239	..	..	..	5,239	5,239	1,331	87	2,21	2,247	4,21	823	4,21	823	..	
30	Mulla do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
31	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
32	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
33	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
34	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
35	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
36	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
37	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
38	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
39	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
40	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
41	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
42	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
43	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
44	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
45	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
46	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
47	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
48	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
49	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
50	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
51	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
52	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
53	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
54	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
55	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
56	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
57	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
58	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
59	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
60	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
61	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
62	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
63	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
64	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
65	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
66	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
67	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
68	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
69	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
70	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
71	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
72	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
73	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
74	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
75	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
76	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
77	Shiruphal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
78	Bhadravadi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
79	Karnal do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	40	..	
80	Asahi do.	1,844	..	..	..	1,844	1,844	407	40	1,844	407	40	1,844	407	4		

III—E.

Statement of Quantity and Value of Crops irrigated in the Deccan and Gujarat during the year 1890-91.

	(1) NIRA CANAL.			(2) MHASWAD TANK.			(5) HA'THATI CANAL.			(6) LOWER PANCHRA RIVER WORKS.			(7) KADVA RIVER WORKS.				(8) PRAYARA RIVER WORKS—LAKH CANAL.			(9) MUTHA CANALS.				
	Area irri- gated.		Estimated Value.	Area irri- gated.		Estimated Value.	Area irri- gated.		Estimated Value.	Area irri- gated.		Estimated Value.	Palkhed Canal.		Ojhar Tumbhot Canal.		Waddil Canal.		Area irri- gated.		Estimated Value.	Area irri- gated.		Estimated Value.
	Acres.	Rs.		Acres.	Rs.		Acres.	Rs.		Acres.	Rs.		Acres.	Rs.		Acres.	Rs.		Acres.	Rs.		Acres.	Rs.	
Gardens and Orchards	81	1,211	126	2,520	2	100	85	1,080	188	6,580	19	665	55	1,925	19	456	226	9,085	226	9,085	226	9,085	226	9,085
Fruit and other trees	80	5,006	47	3,055	2	50	387	15,878	22	1,100	4	200	4	200	39	3,510	527	85,080	527	85,080	527	85,080	527	85,080
Sugarcane	2,600	38,913	869	21,725	569	14,225	418	3,686	213	17,040	6	480	5	400	26	7,280	3,469	12,861	3,469	12,861	3,469	12,861	3,469	12,861
Wheat	91	299	99	930	872	21,800	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Barley	108	1,103	287	4,305	1,217	48,680	27	387	37	1,295	...	...	...	...	...	...	...	...	...	...	...	...	...	
Rice	134	848	522	2,610	10	250	43	412	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Maize	1,653	16,530	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Cereals	4,320	1,09,972	1,653	16,530	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jowar	20	157	131	1,310	43	860	72	648	94	940	9	90	28	280	103	5,150	2,376	55,468	2,376	55,468	2,376	55,468		
Ching, Ragl, Rdla, Wara	4,844	30,126	486	1,944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Bajri	40	72	6	60	26	460	45	407	137	2,329	1	17	31	527	9	360	735	12,588	735	12,588	735	12,588		
Miscellaneous	1,044	15,942	327	4,251	805	20,125	2	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Gram, Urid, Mug	166	1,430	12	144	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tur	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Peas	2,010	63,729	1,775	71,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pulses	78	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ground-nut	584	9,419	352	17,600	5	100	1	8	69	1,035	26	380	10	150	2	100	253	9,061	253	9,061	253	9,061		
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fodder	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fodder Crops	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lucerne, &c.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Cotton	2	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tag (Hemp)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fibres	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Drugs	45	1,973	14	700	1	40	5	11	11	830	...	...	...	...	...	...	...	...	...	...	...	...	...	
Drugs and Narcotics	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mustard, Sesam	3	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Oil-seeds	6	85	5	75	3	75	4	6	2	30	...	...	...	...	...	...	...	...	...	...	...	...	...	
Linseed, Castor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Chilly and Onions	234	5,003	164	4,920	3	120	44	650	67	1,375	8	180	2	30	16	800	...	5,887	...	5,887	...	5,887	...	
Condiments	12	305	2	60	191	4,775	37	296	5	150	1	30	...	...	...	...	...	...	...	...	...	...	...	
Garlic, Turnericand Methi	10	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Land insufficiently irrigated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total	16,913	47,312	7,106	1,88,149	3,766	4,11,660	2,390	37,808	1,731	53,240	193	4,806	303	7,476	438	26,214	11,201	15,86,457	438	26,214	11,201	15,86,457	438	26,214
Area on which consolidated assessment is levied.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

XXV

[illegible]

[illegible]

* No information.

STATEMENT IV—E.

IV—E.

Comparative Statement of Irrigation and Rainfall for the years 1889-90 and 1890-91 in the Deccan and Gujarat.

No.	Works supplying Irrigation.	Civil Station.	Total Area in Acres.	Cultivated Area in Acres.	AREA IRRIGATED IN ACRES.						RAINFALL.		REMARKS.
					1889-90.			1890-91.			1889-90.	1890-91.	
					Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Inches.	Inches.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
					Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Inches.	Inches.	
1	MASON WORKS. Protective Works. Nira Canal	Poona	307,553	135,727	9,819	12,111	21,930	8,920	7,893	16,813	24.57	20.68	Average for 6 stations for 1889-91. Ningaon in addition for 1890-91.
2	Misavadi Tank	Satara, Sholapur and East Fratinidh State.	129,045	106,214	4,074	2,718	6,792	4,081	3,025	7,106	27.33	13.56	
	Total	.....	436,604	241,941	13,893	14,829	28,722	13,001	11,018	24,019	...	...	
	PRODUCTIVE WORKS.												
5	Hithamdi Canal	Ahmedabad	44,744	8,000	909	1,441	2,350	1,266	2,500	3,766	28.06	22.67	
6	Lower Pandhri River Works	Almabad	13,117	12,697	1,585	708	2,293	1,566	884	2,450	13.38	13.88	
7	Kadva River Works. Palkhed Canal	Do.	23,892	2,337	1,351	380	1,731	1,128	603	1,731	18.06	26.97	
8	Waddai Canal	Do.	3,486	2,433	216	47	263	141	52	193	15.39	20.58	
9	Pravara River Works—Lath Canal	Do.	29,913	11,230	256	260	516	143	155	303	26.17	14.94	
10	Muhle Canal	Poona	94,087	49,800	7,653	67	322	239	184	433	36.00	36.53	
11	Ekruk Tank	Sholapur	17,162	16,320	1,335	1,199	2,534	7,736	3,465	11,201	31.86	27.42	
	Arundina Canal	Satara	27,407	26,533	1,667	2,065	3,732	1,736	2,214	3,950	32.96	25.87	
	Total	.....	206,793	137,197	15,207	12,459	27,669	15,795	10,770	26,565	...	...	
	Total, Major Works	.....	703,397	379,138	29,100	27,281	56,381	28,796	21,788	50,584	...	...	

MINOR WORKS AND NAVIGATION.																Area on which consolidated assessment is levied.		Average of 35 stations.		
12	Khari Out	...	...	...	17,300	11,500	2,287	4	2,271	1,325	2	...	58	1,325	23.59	22.75				
13	Haralia Tank	...	...	...	584	415	6	60	66	13	...	...	188	60	27.06	29.69				
14	Mhasra do.	...	...	...	4,647	2,953	743	139	2,023	314	13	...	1,002	188	24.46	30.38				
15	Jamud Canal	...	...	...	46,238	30,638	190	124	2,023	225	94	...	236	405	18.84	24.78				
16	Parul Tank	...	...	...	2,593	97	2,246	2,315	4,061	1,687	179	...	1,475	3,192	12.99	16.22				
17	Pravara River Works—Ojhar Canal	...	...	...	23,724	14,763	2,246	2,315	4,061	1,687	179	...	1,475	3,192	12.99	16.22				
18	Bhokodi Tank	...	...	...	15,126	12,124	82	1,225	1,307	804	447	...	1,370	1,291	19.17	21.69				
19	Matoba do.	...	...	...	10,700	7,133	1,084	1,083	2,177	1,166	713	...	1,879	1,443	17.54	17.54				
20	Kaurdi do.	...	...	...	597	478	53	102	245	27	117	...	144	236	25.01	21.01				
21	Shiruphal do.	...	...	...	4,600	2,500	643	689	1,302	573	438	...	1,643	1,443	25.01	21.01				
22	Bhadalvali do.	...	...	...	3,000	2,400	525	460	982	121	90	...	220	296	29.63	29.63				
23	Kalyan do.	...	...	...	17,892	14,476	829	618	1,447	576	548	...	1,124	296	29.67	25.86				
24	Ashti Canal	...	...	...	3,813	3,624	192	1,083	1,447	576	548	...	1,124	34.92	34.92	26.54				
25	Fevardi Canal	...	...	...	8,443	7,623	743	688	1,431	964	417	...	1,371	36.01	36.01	17.88				
26	Upper Man River Works	...	...	...	11,234	10,680	774	1,160	1,924	895	919	...	1,314	36.01	36.01	23.50				
27	Yera River Irrigation Works	...	...	...	11,234	10,680	774	1,160	1,924	895	919	...	1,314	36.01	36.01	23.50				
28	Chikhi Canal	...	...	...	1,571	1,478	312	101	1,413	322	85	...	407	32.19	32.19	18.34				
29	Maini Tank	...	...	...	4,876	4,625	1,326	449	1,775	1,303	416	...	1,713	32.19	32.19	18.34				
30	Muchkund Tank	...	...	...	5,970	5,417	1,326	449	1,775	1,303	416	...	1,713	20.89	20.89	17.31				
31	Nigund do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
32	Gadikuri do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
33	Dambal do.	...	...	...	14,595	4,925	...	...	1337	...	...	...	...	...	35.56	29.76				
34	Medleri do.	...	...	...	1,916	1,052	95	9	497	177	36	...	...	...	19.28	15.94				
35	Madag do.	...	...	...	2,255	1,730	261	651	104	59	16	...	...	...	23.12	23.08				
36	Arundi do.	...	...	...	1,800	1,800	49	26	651	573	369	...	...	...	29.18	24.53				
37	Mavinikop do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
Total														20,420	11,812	8,608	74,852	1,049	...	...
PROVINCIAL.														3,848	2,562	1,286	74,852	1,049	...	...
39	Golkat Canal, 1st Section	...	...	...	18,066	16,663	2,993	1,185	4,178	...	...	...	...	...	22.72	19.55				
GRAND TOTAL														85,560	43,170	31,682	74,852	1,049	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
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														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...
														...	...	...	...	...	...	...

Note.—The figures in column 4 are those of gross area under command, and those in column 5 of the net irrigable area at present.

Area on which consolidated assessment is levied.

STATEMENT F.

Statement showing the Operations of Irrigation Works in the Deccan and Gujarat for the year 1890-91.

No.	Names of Works.	AMOUNT DUE, 1890-91.		REMISSIONS.		TOTAL.		Grand Total.	REMARKS.
		Kharif, 1890-91.	Rabi, 1890-91.	Kharif.	Rabi.	Kharif.	Rabi.		
1	2	3	4	5	6	7	8	9	10
	MAJOR WORKS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
	<i>Protective Works.</i>								
1	Nira Canal	19,233	18,127	1,134	...	18,099	18,127	36,226	*Free grants.
2	Mhasvad Tank	8,944	5,075	196	282	8,748	4,793	13,541	
	Total ...	28,177	23,202	1,330	282	26,847	22,920	49,767	
	<i>Productive Works.</i>								
5	Hathmati Canal	3,729	4,960	...	3 12	3,726	4,948	8,674	
6	Lower Pánjhra River Works ...	1,537	678	...	...	1,537	678	2,215	
7	Kadva River Works. (Waghad Tank, Palkhed Canal, Ojhar Tánbat Canal, Wadali Canal.)	4,977	1,385	...	...	4,977	1,385	6,362	
8	Pravara River Works—Lakh Canal	620	125	...	...	620	125	745	
9	Mutha Canals	528	314	3	...	525	314	839	
9	Mutha Canals	802	448	...	...	802	448	1,250	
10	Ekrúk Tank	1,01,000	9,000	...	...	1,01,000	9,000	1,10,000	
11	Krishna Canal	7,738	2,455	...	...	7,733	2,455	10,188	
	Total ...	23,630	9,077	...	...	23,630	9,077	32,707	
	Total ...	1,44,556	28,442	6	12	1,44,550	28,430	1,72,980	
	Total Major Works ...	1,72,733	51,644	1,336	294	1,71,397	51,350	2,22,747	
	MINOR WORKS AND NAVIGATION.								
12	Khári Cut... ..	8,560	...	2,482	...	6,078	...	6,078	
13	Hartála Tank	6	116	...	...	6	116	122	
14	Mhasva Tank	72	350	...	...	72	350	422	
15	Jámda Canals	1,128	2,080	38	...	1,087	2,080	3,167	
16	Parsol Tank	...	...	...	...	...	...	...	
17	Pravara River Works—Ojhar Canal	3,087	3,028	...	...	3,087	3,028	6,115	
18	Bhátodi Tank	3,327	916	...	...	3,327	916	4,143	
19	Matoba do.	6,335	1,578	...	...	6,335	1,578	7,913	
20	Kasurdi do.	38	270	...	...	38	270	308	
21	Shirsuphal Tank... ..	1,578	1,134	...	...	1,578	1,134	2,712	
22	Bhádálvadi do.	2,503	506	...	...	2,503	506	3,009	
23	Koregaon do.	390	200	...	...	390	200	590	
24	Ashti do.	1,931	1,353	...	...	1,931	1,353	3,284	
25	Revári Canal	2,172	2,852	...	26	2,172	2,826	4,998	
26	Upper Mán River Works ...	4,609	1,247	...	...	4,609	1,247	5,856	
27	Yerla River Irrigation Works ...	5,171	3,318	...	6	5,171	3,307	8,478	
28	Chikhli Canal	1,485	359	...	...	1,485	359	1,844	
29	Maini Tank	6,212	1,623	...	...	6,212	1,623	7,835	
30	Muchkundi Tank	59	5	...	...	59	5	64	
31	Nigand do.	...	...	...	...	...	...	...	
32	Gálikeri do.	...	...	...	...	...	...	...	
33	Dambal do.	497	139	...	...	497	139	636	
34	Medleri do.	262	83	...	...	262	83	345	
35	Madag do.	1,334	1,284	...	...	1,334	1,284	2,618	
36	Asundi do.	263	77	...	...	263	77	340	
37	Mávinkep do.	...	...	...	...	...	...	...	
	Total ...	50,916	22,513	2,520	32	48,396	22,481	70,877	
	<i>Provincial.</i>								
39	Gokák Canal, 1st Section, and Storage Works	4,316	2,894	...	†10	4,316	2,884	7,200	†Refunded in 1891-92.
	GRAND TOTAL ...	2,27,965	77,041	3,856	326	2,24,109	76,715	2,30,824	

† Note.—The difference of Rs. 4,871 between this and the Grand Total of direct water-rates (vide column 6 of Statement II—E) is on account of enhanced water-rates on old works of the Lower Pánjhra River system.

I—F.

Statement showing Water-rates per Acre in force during 1890-91 on Irrigation Works in the Bombay Presidency, excluding Sind.

No.	Names of Works.	WATER-RATES.					Occupiers Rate.	Owners Rate.	Water advantage.	REMARKS.
		Class I.	Class II.	Class III.	Class IV.	Class V.				
		Perennial.	Eight months.	Four months.	Monsoon dry.	Special hot weather.				
1	2	3	4	5	6	7	8	9	10	11
	MAJOR WORKS.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
	<i>Protective Works.</i>									
1	Nira Canal	8	3 0 0	1 4 0	0 4 0	4 0 0	(a)			Half rates are levied on irrigation from leakage water picked from ridges at the expense of the cultivators. (a) Up to June 1890. (b) From 1st July 1890 to 15th January 1891. Revised rates sanctioned as per G. R. No. 47—A. I.—598, dated 19th March 1890. * For <i>Mad</i> land, 8 months and rabi crops. † Rice flooding land is charged at Re. 1.
2	Mhasvad Tank	10	4 0 0	2 0 0	0 12 0	5 0 0	(b)			
	<i>Productive Works.</i>	8	3 0 0	1 4 0	0 4 0	4 0 0				
5	Háthmati Canal	10	3 0 0	2 0 0	1 0 0	0 6 0				
6	Lower Pánjira River Works... ..	10	4 0 0	2 0 0	1 0 0	4 0 0				
7	Páskhed Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
	<i>Works.</i>									
	Ojhar	8	4 0 0	2 0 0	1 0 0	6 0 0				
	Támbat Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
	Waddi Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
8	Pravara River Works—Lákh Canal	8	4 0 0	2 0 0	0 8 0	4 0 0				
	<i>Mutia Canals.</i>									
	First Section, i.e. within the Poona City and the suburban Municipal and Cantonment limits or within one mile of these limits.	A. 50		2 8 0						
		B. 9	5 0 0		1 4 0	6 0 0				
		C. 6		2 0 0						
	Second Section, i.e. for all villages excepting those within the above mentioned limits within a radius of 8 miles from Poona.	A. 25		2 8 0						
		B. 18	5 0 0		1 4 0	6 0 0				
		C. 12		2 0 0						
	Third Section i.e. for villages beyond those limits.	A. 18		2 0 0						
		B. 12	4 0 0		1 0 0	6 0 0				
		C. 10		1 8 0						
	For Pán gardens wherever situated throughout the canal, ...	30								
10	Ekrak Tank	10	4 0 0	2 0 0	0 12 0	6 0 0				
11	Krishna Canal	122	4 0 0	2 0 0	1 0 0	6 0 0				
	MINOR WORKS AND NAVIGATION.									
12	Khári Cut	14	5 7 0 0	5 0 0	1 0 0					
13	Hartáde Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
14	Mhasva Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
15	Jamda Canals	16	4 0 0	2 0 0	0 8 0	4 0 0				
16	Parsul Tank			4 0 0	1 0 0	6 0 0				
17	Pravara River Works (Ojhar Canal)	8	4 0 0	2 0 0	0 8 0	4 0 0				
18	Bhatodi Tank	12	4 0 0	2 0 0	1 0 0	4 0 0				
	<i>As detailed under water-rates.</i>									
		A. 18		2 0 0						
		B. 12	4 0 0		1 0 0	6 0 0				
		C. 10		1 8 0						
19	Matoba Tank	Pán garden 30								
		A. 16								
		B. 12	4 0 0	2 0 0	0 12 0	6 0 0				
		C. 10								
20	Kásurdi Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
21	Shirsuphal Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
22	Bhádalyádi do.	10	4 0 0	2 0 0	0 12 0	4 0 0				
23	Koregaon do.	6	2 0 0	2 0 0	2 0 0	2 0 0				
24	Ashti do.	12	4 0 0	2 0 0	0 12 0	4 0 0				
25	Revári Canal	12	4 0 0	2 0 0	1 0 0	6 0 0				
26	Upper Mán River Works	18	4 0 0	2 0 0	0 12 0	6 0 0				
27	Yecha River Irrigation Works.	18	4 0 0	2 0 0	1 0 0	6 0 0				
28	Chikhli Canal	18	4 0 0	2 0 0	1 0 0	6 0 0				
29	Maini Tank	18	4 0 0	2 0 0	0 12 0	6 0 0				
30	Muchkund Tank	8	4 0 0	2 0 0	1 0 0	4 0 0				
31	Nilgund do.									
32	Gadikeri do.									
33	Dámábal do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
34	Medleri do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
35	Madag do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
36	Asundi do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
37	Mávinkop do.									
	<i>Provincial.</i>									
38	Gokák Canal, 1st Section, and Storage Works	10	(b) 3 0 0	(d) 1 8 0	0 12 0	(f) 5 0 0				
		(a) 7	(c) 6 0 0	(e) 2 0 0						

Note.—(1) For lift irrigation half the ordinary rates are charged.

(2) Double the ordinary rates are charged as penal rates for taking water without permission.

STATEMENT G.

Statement showing Areas and Water-rate Assessments during 1890-91 according to the system of classification adopted in fixing the Scale of Water-rates.

Number.	Name of Work.	CLASS I.—PERENNIAL.		CLASS II.—8 MONTHS.		CLASS III.—4 MONTHS.		CLASS IV.—MONSOON DAY.		CLASS V.—SPECIAL HOT WEATHER.		MISCELLANEOUS.		GRAND TOTAL.		REMARKS.	
		Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.		
MAJOR WORKS.																	
Protective Works.																	
1	Mira Canal		2,911 *174		13,105 *465		14,810 *170		4,009 *309		2,525 *76				37,360 *1,134	* Free grants. Of this 615 a received free.	
		249	2,737	3,323	12,700	7,435	14,640	5,222	3,700	594	2,449			716,918	36,226		
			2,219 *32		6,116 *180		3,423 *241		161 *1		2,064 *24	32			14,020 *478		
		271	2,187	2,778	5,839	2,972	3,137	623	160	456	2,040		32	17,106	13,542		
Total		630	4,924	6,101	18,836	10,497	17,827	5,845	3,860	1,050	4,489		32	24,019	49,768	Includes 263 a which recce water free.	
Average rate			7.86		3.05		1.71		6.80		4.27				2.07		
Productive Works.																	
6	Hithmati Canal	2	18	1,221	3,666	2,492	4,939	34	24			17	17	3,766	8,474	Exclusive of re sion.	
6	Lower Panjhra River Works	82	856	152	535	296	602	161	181	1	8		7	681	2,515		
7	Kadra River	237	1,824	592	2,476	1,275	218	226	95	561				1,731	6,382		
7	Other Panjhra Canal Works	10	87	73	306	55	124	28	40	27	135			193	745		
8	Wadiati Canal	8	71	86	345	161	327	38	39	10	57			303	839		
8	Pravara River Works—Lath Canal	45	531	26	140	224	516	106	69	3	10			434	1,250		
9	Mutha Canal	(First Section, i.e., within the Poona City and the Suburban Municipalities and Cantonment limits or within one mile of these limits.	A.	660	32,401												
		(Second Section, i.e., for all villages excepting those within the above-men- tioned limits with in a radius of 8 miles from Poona.	B.	446	3,596												
		(Third Section, i.e., for villages beyond those limits.	C.	154	895	267	1,460	270	1,021	118	147						
		(For open gardens wherever situated throughout the Canal.	A.	2,075	45,992												
			B.	49	833									13	279	11,201	1,10,000
			C.	37	1,053												
			A.	534	9,023												
			B.	12	139	862	3,525	2,802	5,740	2,593	2,597						
			C.	16	137												
10	Ekruk Tank		43	1,356													
11	Krishna Canal		454	4,475	410	3,298	458	1,331	575	434	101	622		89	2,590	10,187	
Total			1,046	21,143	2,388	8,930	301	640			217	1,695			3,020	32,708	
Average rate			2.1		2.89		2.16		.96		7.57		11.3		6.95		
MINOR WORKS AND NAVIGATION.																	
12	Khidri Cut			1,325	6,078									1,325	6,078	Exclusive of remis sion.	
13	Hartala Tank					88	117	1	1					60	123		
14	Mhaswa do.	3	32	10	40	175	350							128	422		
15	Kevira do.	4	832	45	176	993	1,929	265	166	6	64			1,813	3,167		
16	Parul Tank	2	2			223	167							405			
17	Pravara River Works (Ojhar Canal)	175	1,369	61	214	1,605	809	1,242	640	180	733			3,163	6,114		
18	Bhatodi Tank	56	667	565	2,288	446	3,933	133	169	31	135			1,251	4,148		
19	Mastaba do.	A.	229	5,890													
		B.	1	7	107	436	807	1,823	666	606			3	28	1,879	7,914	
		C.	2	21													
20	Kasurdi do.	8	61														
21	Shirsuphal do.	77	160	22	90	100	200	20	13				1	3	143	368	
22	Bhadalvadi do.	A.	23	212	157	629	341	724	896	297				3	13	1,005	2,712
		B.	8	77													
		C.	186	1,715													
23	Koregaon do.	9	74	145	578	204	484	86	64				9	55	643	3,009	
24	Ashti do.	4	39														
25	Koregaon do.	36	216	128	256	23	46	32	70	1	2			220	690		
26	Ashti do.	67	894	298	1,193	502	996	234	175	23	116			1,124	3,234		
27	Dambai do.	85	1,841	576	2,310	394	598	77	7	64	565			1,027	5,034	Includes remis sion of Rs. 26.	
28	Upper Man River Works	75	1,333	380	1,139	383	771	240	182	288	2,035		1	3	1,370		5,856
29	Verla River Irrigation Works.	113	2,067	1,114	4,431	332	695	65	95	153	1,182		2	4	1,514	58,484	
30	Chikhli Canal	15	257	273	1,106	55	110	14	14	40	85		1	2	407	1,844	
31	Maini Tank	129	2,332	813	3,345	298	594	265	204	221	1,560			1,739	7,535		
32	Muehkundi do.	4	33											11	64		
33	Nigund do.																
34	Gadikeri do.																
35	Dambai do.	19	191	40	223	38	77			25	100		51	40	213	636	
36	Medleri do.	24	228	6	85	85	70			3	11		7	2	75	246	
37	Mastab do.	27	258	153	915	704	1,406	2	1				56	38	942	2,618	
38	Assandi do.	5	66	23	150	51	110			2	13		1	1	85	346	
39	Mavinakop do.																
Total		1,494	20,067	6,267	25,983	7,641	15,108	3,385	2,768	1,062	6,850	170	179	20,410	70,910		
Average rate			13.4		4.11		3.00		7.09		6.45		1.05		3.47		
PROVINCIAL.																	
40	Gokshi Canal, 1st Section, and Storage Works	47	719	573	1,727	1,868	3,372	1,177	882	58	290	125	450	3,348	7,290		
Grand Total		8,337	149,576	19,406	70,988	27,661	52,817	14,781	11,251	2,624	15,067	335	1,079	73,144	300,855		
Average rate			17.9		3.65		1.90		7.61		5.74		3.22		4.11		

MAJOR WORKS.

PROTECTIVE IRRIGATION WORKS.

(1).—NIRA CANAL.

The length of main canal in operation was the same as in the previous year, namely 95½ miles. The earthworks and masonry works, with the exception of one road bridge and one superpassage, which have now been found necessary, are complete to the end of the canal. The irrigable area under command at the close of the previous year was 134,935 acres. During the year Distributary No. 58 was opened for irrigation, bringing an additional area of 792 acres under command, making the total for the canal 135,727 acres. Considerable progress was made with Distributary No. 59, and the first 8 miles with one branch, 3 miles in length, was opened towards the close of the year, and will be available for the kharif irrigation of next year.

2. The total area irrigated during the year was 16,913, which compares with the previous years, since the opening of the canal, as follows :—

Years.				Kharif.	Rabi.	Total.	Water-rates assessed.
				Acres.	Acres.	Acres.	Rs.
1885-86	...	...	...	2,796	8,399	11,195	Water given free.
1886-87	...	...	...	1,708	2,754	4,462	6,050
1887-88	...	...	...	2,765	2,763	5,528	7,829
1888-89	...	...	...	4,209	14,350	18,559	20,671
1889-90	...	...	...	9,819	12,111	21,930	24,688
1890-91	...	...	...	8,920	7,993	16,913	36,226

3. The area irrigated was 5,017 acres less than in the previous year, the decrease being due to the exceptionally favourable rainfall; such a good rabi season has not been known in the Nira Valley for years, for rain fell towards the end of October, in November, and again just when it was wanted in December. The result was a decrease in nearly all the rabi irrigated crops, because the people sowed jowári on all the land that was available. The area of sugarcane was 270 acres as compared with 143 acres in the previous year, and the area of groundnut 2,010 acres, being 876 acres more than last year.

4. The area of irrigation applied for compares with that determined by measurement as follows :—

Season and Years.				Applied for.	Irrigated.	Differenced.	Percentage of difference on Area applied for.
				Acres.	Acres.	Acres.	
<i>Kharif.</i>							
1889-90	...	...	...	7,871	9,819	1,948	.....
1890-91	...	...	...	7,303	8,920	1,617	.....
<i>Rabi.</i>							
1889-90	...	...	...	7,913	12,111	4,198	.....
1890-91	...	...	...	6,584	7,993	1,409	.....
1889-90	...	...	...	15,784	21,930	6,146	38.9
1890-91	...	...	...	13,887	16,913	3,026	21.79

5. The following table shows the total rainfall of the year at the different stations along the canal:—

Stations.	Rainfall, 1890-91.	Average for 10 years up to end of 1889-90.	Average for the last 4 years, i.e. up to end of 1890-91.
	Inches.	Inches.	Inches.
Virvadi Dispensary	21-56	.....	.....
Do. Bungalow	20-28	21-98	22-61
Pimpri	24-26	22-24	26-10
Vadgaon	23-96	21-02	23-29
Pandara	23-87	20-32*	22-33
Baramati	22-96	21-65	21-90
Sansar	23-25	22-44†	24-26
Haturna	22-28	21-46‡	21-66
Nimbgaon	18-07	22-02‡	21-03
Indapur	19-08	29-18§	26-08

* For 9 years.

† For 6 years.

‡ For 3 years.

§ For 5 years.

6. The river began to rise on 19th June. There were no heavy floods during this season, the highest rise being only 4-6 feet above the crest of the main weir. The river supply. The river supply fell rapidly in October, towards the end of which month the storage at Bhátghar had to be drawn upon. The quantity stored at Bhátghar was 3,000 million cubic feet, which, owing to the small area of irrigation, was considerably in excess of requirements.

The canal discharge was maintained throughout the year without intermission, there being no necessity to close it absolutely for any purpose. The discharge was on two occasions reduced to admit of repairs to banks being carried out.

The following shows the average monthly discharge of the canal at the head:—

April 1890	... 85 cubic feet per second.
May "	... 114 "
June "	... 128 "
July "	... 169 "
August "	... 167 "
September "	... 173 "
October "	... 162 "
November "	... 182 "
December "	... 161 "
January 1891	... 155 "
February "	... 164 "
March "	... 154 "

7. The working expenses, including indirect charges, amounted to Rs. 30,482.

Working expenses. This is at the rate of Rs. 321 per mile of main canal in operation (95 miles) and Rs. 1-80 per acre irrigated.

8. The gross revenue from all sources amounted to Rs. 38,125. The

Assessed revenue. assessed water-rates amounted to Rs. 36,226 for an area of 16,913 acres, of which 616 acres received water free. The net revenue of the year was Rs. 38,125—Rs. 30,482 + Rs. 7 refunds of revenue = Rs. 7,636.

9. The expenditure on plantations was Rs. 1,870 and receipts on account of plantations and canal produce Rs. 936. The plantation consists principally of bábul trees, which were counted during the year with the following result:—

Trees measuring in girth ...	Inches.	No.
Do. do. ...	15 to 24	14,043
... 24 and over.		12,685
Total ...		<u>26,728</u>

10. The area irrigated, with the exception of a small area of sub-divided land, was obtained by actual measurement, the total cost of which was Rs. 1,275, or at the rate of Re. 0-1-2 per acre.

Cost of measurement of irrigation.

11. The results of the special experiments to obtain the duty of water on distributaries were vitiated by the heavy rain that fell in November and December. It would, therefore, serve no useful purpose to record them. They will be continued next year.

Duty of water.

12. The rates now in force are shown in Statement 1-F. It may be noted that the decrease in irrigation is in no way due to the increase in rates, which are still very reasonable; the decrease is solely due to the extremely good rainfall.

Water rates.

13. Excluding the area irrigated free of charge, the total area irrigated and assessed during the year was 16,297 acres, and the water-rate on this area amounted to Rs. 36,226, or an average of Rs. 2-22 per acre, as compared with Rs. 1-3-0 and Rs. 1-6-0 per acre in the previous two years.

14. The results of the year as regards irrigation show how much a favourable and well distributed rainfall will affect the area irrigated. Not only is the area of dry-crop reduced, but wheat and garden crops are also affected, because as soon as the people find the rainfall sufficient, they sow jowári everywhere, and give up the crops that require irrigation to bring them to maturity. This, it is found, is due not to area of land not being enough, but to the want of labour. Such large areas are put under jowári that it is as much as the people can do to attend to the sowing of this crop alone. The extent to which jowári was sown this year may be judged from the fact that in February, when the crop was ripe, hundreds of acres had to stand uncut for nearly a month for want of labour to cut it, and the owners in a portion of the district near the town of Bárámáti were offering grain and straw which at the market value amounted to a daily wages of 10 annas, and yet could not get the labour. It also happened that the kharif crop "groundnut" was ready to be dug at the same time, and the rate offered for this work was as much as 50 per cent. of the out-turn. Groundnut, however, if kept in the ground, and not watered, will keep and improve for two or three months after the nut is full grown; many of the people when this was explained to them, allowed their crops to remain, with very good results. The development of irrigation from the end distributaries is very slow; the people say they wish to see how the canal water holds out for two or three seasons before they sink capital in building field channels and preparing land. During the past year the canal was kept flowing through the whole of the hot weather down to the 95½ mile, and from the reports that have recently been received it appears that the people have been much impressed, and are rapidly gaining confidence. This is proved by a number of applications having been received for the irrigation of "Pán," a crop that requires a very constant supply, five days being the limit to which the crop can be kept without water, so as not to check the growth. The sugarcane crop that came to maturity during the year was very satisfactory, and the people seem to be satisfied that the juice of canal-grown cane is quite equal to that grown by well irrigation. The area applied for during the year 1891-92 will probably exceed 600 acres.

General remarks.

(2).—MHASVAD TANK.

The rain-fall gauged at Rájevádi was 18-80 inches against 29-89 inches in the previous year. There was very little replenishment in the tank during the early rains, being only 4-30 feet. The total rise in the tank from time to time during the remaining part of the year was 17-10 feet. The highest level of the water was 1,935-50 feet, or 4-20 feet below crest of weir. The reduced level of the water in the tank before the rainy season set in, viz. on the 5th June 1890, was 1,928-60. The lowest R. L. of the water in the tank was 1,927-90, or 12-20 feet above the sill of the canal in the early part of September 1890. This was sufficient for about seven months for the kharif area of 4,081 acres, for which water was given.

2. The area irrigated during the year was as follows :—

Kharif,	Rabi.	Total.
4,081	3,025	7,106

representing an increase of 314 acres over the area of the previous year. The land under command is generally inferior on which kharif can be profitably grown. One new distributary has been opened during the year. This is the fifth year since the opening of the canals for irrigation, and from the following figures it will be seen that the irrigation is gradually increasing :—

Year.	Area irrigated.	
1886-87	...	1,344
1887-88	...	3,861
1888-89	...	6,104
1889-90	...	6,792
1890-91	...	7,106

The length of the canals, including branches and distributaries, is 94 miles. The area for which water was granted free during the year for first year's irrigation was 263 acres.

3. The area applied for, as per statements of irrigation operations, was as under :—

	Kharif.	Rabi.	Total.
Applied for	3,514	3,370	6,884
Actual	4,081	3,025	7,106
Increase	567	...	222
Decrease	...	345	...

Though the cultivators have, on all possible occasions, been impressed with the necessity of applying only for the acreage they mean to cultivate, it is found that the applications and actuals vary very considerably, the only apparent cause being that the portions of fields are cultivated; and that the cultivators simply make a guess at the area and enter this in the application; the discrepancies will, however, gradually decrease as the cultivators get more accustomed to irrigation.

4. As usual the irrigated area was measured by the measurers engaged specially for the purpose, and the subordinate in charge checked the measurements to the extent of 11 per cent. of the total area irrigated. The total cost on this account was Rs. 1,069, representing Rs. 0-2-5 per acre irrigated.

5. The working expenses amounted to Rs. 12,729 against Rs. 12,285 in the previous year. The charges for collection were Rs. 986. The maintenance charges amounted to Rs. 7,039, inclusive of what was spent on plantation, representing Rs. 75 per mile, the canal in operation being 94 miles.

6. The assessment of the year from all sources amounted to Rs. 14,241, of which Rs. 13,542 were on account of water rates. The area irrigated consists to a great extent of irrigation in dry-crops for which the water rates are low; hence the small assessment. It is further affected owing to the rates based on land assessment, which is annas 12 per acre for all crops, except perennial, on land assessment at or below annas 4 per acre. These rates are now raised and it is expected that there will be a marked difference in the revenue at old and new rates.

7. The realizations from all sources was Rs. 19,430, of which Rs. 746 were only from miscellaneous receipts.

Again the working expenses were 65 per cent. of the revenue.

During the year the maintenance charges were considerably reduced and great economy was exercised in the expenditure.

8. The expenditure on plantation was Rs. 488 and the receipts Rs. 63. The number of trees above 5 feet was 12,317 and that below 5 feet 13,294. The ground along the line of canals, except in small portions, being muram and rocky, plantations are not in a promising state; however, tree-plantation has been extended where feasible with economy.

9. Experiments were made on this canal to determine the duty of water and the result was as following :—

			Quantity of water required to mature.
Sugarcane	...	...	Per acre 405,046·3
Ground-nut	...	...	" 105,626·8
Do.	...	...	" 106,481·5

For general results ascertained from the discharge at head no data for the duty can be fixed until all the discharge in canals is utilized for irrigation; however, the results obtained are given in the Statement I—E as usual.

Owing to the distance the water has to be carried, the discharge at the head cannot be reduced, as then in certain portions of the canal the water would be cut off just at the time it is particularly wanted; but arrangements are being made for storage reservoirs, into which the surplus water will be led, and then made use of for cultivation, which will allow of the discharge at the head being considerably reduced.

10. Five rain gauges were maintained to ascertain the rainfall on the catchment area, which is 480 square miles. The average rainfall at these stations was 18·61 inches, which gives 20,753 millions of cubic feet of water that fell on this area. The run-off is thus calculated to be 0·128 of the total rainfall.

The following gives the loss in evaporation, absorption, &c :—

			Cubic feet.
Total quantity of water in the tank for use during the year	...	...	3,738,697,978
Quantity discharged through the canal and by leakage	...	...	1,722,950,784
Actual quantity of water in the tank on the 31st March 1891	...	...	1,391,340,132
			<u>3,114,290,916</u>
Quantity lost by evaporation, absorption, &c., during the year 1890-91 (4·84 height)	...	...	624,407,062

11. The work of Methávádi distributary was completed during the first quarter of the year, and no further work on distributaries was taken in hand during the year.

PRODUCTIVE WORKS.

(5).—HÁTHMATI CANAL.

The rainfall for the year under report was 23·03 inches against 29·20 inches the previous year, the average of the last five years being 24·97 inches.

2. The areas irrigated during the last year and the year under report were as follows :—

Area irrigated		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1889-90	...	909	1,441	2,350
1890-91	...	1,266	2,500	3,766

3. The assessments were as under :—

Assessments.		Kharif. Rs.	Rabi. Rs.	Total. Rs.
1889-90	...	2,809	2,554	5,663
1890-91	...	3,727	4,947	8,674

4. The total area irrigated and the assessments during the year were not only a good deal in excess of those in the previous year but were the highest on record since the canal has come into operation. This was caused by a considerable increase of rabi irrigation, due to the greater demand for water in consequence of deficient rain as well as to closer attention given to the distribution of water consequent on a change in establishment.

5. There were no remissions during the year except Rs. 15 for free grants.

Remissions.

(6).—LOWER PA'NJHRA RIVER WORKS.

6. The areas applied for and irrigated were as follows :—

		Kharif. Acres.	Rabi. Acres.
Applied for...	...	958	1,901
Irrigated ...	...	1,266	2,500

The difference is due to the fact that the cultivators generally apply for a less average than what they actually irrigate, and also to the circumstance that certain fields situated within 200 yards of the canal which are benefitted by percolation are assessed though no applications are made for such lands.

7. The miscellaneous revenue realized amounted to Rs. 1,126, which was also the maximum since the opening of the canal and was due to the careful control and management.

8. The areas irrigated were measured by the ordinary establishment employed on the canal (charged to Revenue Establishment) at a total cost of Rs. 234, or 1 anna per acre, as compared with 9 pies per acre of the previous year.

9. The average water-rate per acre irrigated during the year was Rs. 2.30, as compared with Rs. 2.40 of the previous year.

10. The working expenses, as compared with those of the previous year, were as follows :—

Year.	Extensions and Improvements.	Maintenance and Repairs.	Establishment, including Indirect Charges.	Tools and Plant.	Total.
		Rs.	Rs.	Rs.	Rs.
1889-90 ...	...	4,265	2,161	29	6,455
1890-91 ...	...	4,765	1,893	4	6,662

The rate per acre irrigated was Rs. 1.76 for the year under review, against Rs. 2.74 the previous year. The rate would have been still less had there not been a heavy charge (Rs. 2,238) on account of silt clearance. The average amount expended on this item has been Rs. 452 per annum from the commencement, while the length of the canal and distributaries is 51 miles, which gives a yearly rate of about Rs. 9 per mile.

11. No reliable data can be given regarding the duty of the water. The canal has been gauged for a series of years, and the result shows that at least 50 per cent. is lost by absorption and evaporation in the first 10 miles where there is practically no irrigation. The average discharge, as gauged at the head during the last kharif season, was 89 cubic feet per second, while the irrigated area was 1,266 acres. This gives a duty of 14.22 acres per cubic foot, but as nearly 50 per cent. is lost in the first ten miles, the real duty for the kharif is nearly 28.5 acres per cubic foot of discharge, which is about the same as in the previous year. In the rabi season the average discharge at the head for the year under report was 76 cubic feet per second and the area irrigated 2,500 acres, and allowing the same percentage for loss by absorption, the result gives nearly 66 acres per cubic foot as against 60 for the previous year.

(6).—LOWER PA'NJHRA RIVER WORKS.

The area irrigated during the year was :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Mámul bágáyat land or permanent irrigation ...	1,203	506	1,709
Jiráf land or new irrigation ...	363	318	681
Total ...	1,566	824	2,390

Of the 1,709 acres of *mámul bágáyat* 167 acres of Kavthal, being an *Inám* village, does not pay enhanced water-rate for the Mukti Tank water; and 238 acres in Mandal village did not receive water on account of the breach in the *bandhara*. The Japi Thal also was not under irrigation, because the people would not clear the silt out of the channel.

2. The irrigation in the *mámul bágáyat* land is fixed, whereas that in the dry land fluctuates according to the inclination and means of the irrigators, as also according to the nature of the rainfall and conditions of the Pánjhra River supply and the Mukti Tank storage.

3. Reference to the last year's report will show that the Pánjhra River supply was deficient even in the previous year's *rabi* season, and had to be supplemented by drawing from the Mukti Tank. It was estimated then that the storage would with difficulty serve the permanent irrigation alone throughout the following hot weather. It was, therefore, necessary to restrict the supply to *bágáyat* land, disallowing irrigation in dry land, and to regulate very carefully the tank discharge. These measures proved to be by no means unwarranted, as the tank was empty on 4th June, but fortunately received a replenishment on the following day. The distribution arrangements were satisfactory, but personal enquiries in *Betávad* proved that the supply allowed was certainly not too liberal. This year's experience shows conclusively that the tank cannot be depended upon to protect more than the existing area of permanent *bágáyat* in a bad year, and that 216 millions cubic feet at the end of October 1889, with a bad river supply, necessitated the refusal of all applications for water. Had any failure to satisfy the Thals occurred, it is most probable that Government would have had to meet claims not merely for remission of revenue, but for compensation to the extent of some Rs. 18,000. In the monsoon the tank was not drawn upon. The contents at the end of the monsoon amounted to 301·50 millions cubic feet against 342·3 millions cubic feet, its full supply. In the following *rabi* season the tank sluice was kept open from 20th November to 8th December 1890 to meet the requirements of *rabi* irrigation, and although it was closed on the 9th of December, the precarious river supply necessitated its being reopened early in January; after that the tank storage was drawn upon until the end of the year.

4. The scarcity of water naturally drew attention to the anomalous position in which the village of Kavthal stands. Kavthal is an *Inám* village, and when the rates for permanent *bágáyat* were raised on account of the guarantee afforded by the Mukti Tank, the *Inámdar* protested, and as there appeared to be no satisfactory way of proving that he actually used the Mukti Tank water, his contention being that he only used and only wanted the natural supply in the river, his village succeeded in getting exemption from the general rule. It was perfectly obvious in the present year that Kavthal was really getting far more water than the river supplied, and an effort has been made to prove this point.

5. A series of observations throughout the season on the discharge of the river at various points was undertaken, and at the same time statistics as to the crops grown before and after the construction of the tank were examined. The gauging observations indicate sufficiently that the *Inámdár's* theory is not correct, but the crop statistics show clearly that the standard of cultivation has greatly changed. The area under sugar and plantain has quadrupled itself; the total area of irrigated crops in the Thal has increased by nearly 38 per cent., while the Thal itself has expanded from 141 to 165 acres. It seems, therefore, clearly proved that Kavthal derives very great benefit from the Mukti Tank.

6. The confusion occasioned by the revision of the survey still obtains in Mudhi and Mandal. An enquiry into the question referred to in the last revenue report as to whether the *petal* assessment of Rs. 2,249 in these two villages was just or not showed that the people were really taken quite unawares. It seemed to be proved that they took water in the belief that their land was still permanent *bágáyat*, and that, therefore, they had a right to the water without application, and that they were completely ignorant as to what changes were made by the revision survey, and elicited from the irrigators a strong protest against any changes having been made and an emphatic denial

of their having been consulted in the matter at all. The results of the enquiry were referred to the Collector in November 1890 for verification, with an expression of opinion that the penal assessment should be remitted, but the result is not yet known.

7. The following table gives the comparison of the rainfall during the year with that of the previous year in the kharif and rabi season :—

Seasons.					1889.	1890.
<i>Kharif.</i>						
June	...	...	...	...	2.71	5.00
July...	...	...	...	...	5.21	1.31
August	...	...	...	...	1.39	1.96
September	...	...	...	...	3.53	4.44
					12.84	12.71
<i>Rabi.</i>						
October	...	...	...	...	0.54	0.58
November	...	...	...	...	...	0.39
December	...	...	...	...	...	0.15
January	...	...	...	...	...	...
					0.54	1.12

The total fall during the year was 14.01 inches against 13.56 inches in the last year, and 23.70 inches the average of the past 16 years.

8. The following table is given to compare the irrigation of the present with the previous year in dry land :—

		Kharif.		Rabi.		Total.	
		1889.	1890.	1889.	1890.	1889.	1890.
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Perennial	...	132	82	14	...	196	82
8 months	...	146	127	75	5	221	132
4 months	...	...	1	134	294	134	295
Monsoon	...	11	152	2	12	13	164
Hot weather	...	19	1	...	...	19	1
Waste of water	...	1	...	...	7	1	7
		359	363	225	318	584	681

The falling off in the perennial and hot weather crops is due to the stopping of irrigation in jirait land, and the increase in the 4 months' irrigation is due to the wheat irrigation being three times that in the previous year, viz. 213 acres against 71.

9. The assessments of the year amount to :—

	Rs.
I.—Enhanced water-rates on old land	...
II.—Irrigation share of consolidated revenue from old land	...
III.—Water-rates on new land	...
IV.—Miscellaneous	...
Total	15,153

The average rate per acre paid by the old irrigation is Rs. 7-5-0 and the new irrigation is Rs. 3-4-0 less than half of the former.

10. The realizations amount to :—

			Rs.
I.—Enhanced water-rates	...	...	5,909
II.—Irrigation share of consolidated revenue	...	...	6,628
III.—Water-rates on new land	...	...	2,159
IV.—Miscellaneous	...	...	440
Total	...	...	15,136

11. The outstandings of revenue, exclusive of rabi assessment sent for realization, at the close of the year amount to :—

			Rs.
I.—Enhanced water-rates	...	...	1
II.—Water-rates on new land	...	...	2,310
Total	...	...	2,311

The heavy outstandings are due to the question of the penal rate levied on Mudhi and Mandal referred to in last year's revenue report and also alluded to in paragraph 6 *ante*.

12. There were no remissions.

13. The following is a comparison of the area for which water was asked and the area actually watered :—

Areas.					Kharif.	Rabi.	Total.
					Acres.	Acres.	Acres.
Applied for	...	...	...	...	325	306	631
Assessed	...	...	...	...	363	318	681
Difference	...	...	...	...	38	12	50

Only 50 acres were irrigated in excess of the area for which water was asked. The increase in the kharif areas is partly due to the receipt of some of the applications after the despatch of the final irrigation operation statement for the kharif season, and partly to the unauthorised irrigation.

14. The increase in the rabi season is due partly to under-estimate of the areas and partly to irrigation without permission.

15. The total cost of measurements was Rs. 70-15-0, or 0-1-8 per acre irrigated, the same as in the last year.

16. The working expenses amount to Rs. 8,879.

17. The scale of water-rates for irrigation in new land is given in the Appendix F to this report. The assessments under this scale amount to Rs. 2,215, or Rs. 512 more than what they would have been under the scale of water-rates in force prior to 1889, namely, Rs. 1,703.

18. The following figures represent the calculated evaporation and absorption from the tank after making deductions for leakage gauged below the dam :—

Evaporation and absorption on mean water area during the			
kharif season from April to September 1890 (148 days)...	6-46	feet	
Do. rabi season from October 1890 to January 1891 (122 days)	2-29	"	
Evaporation and absorption on mean water area during the			
hot season from February to March 1891 (59 days) ...	1-32	"	
Total loss ...	10-07	"	
Average daily loss ...	0-0306	"	

(7).—KÁDVA RIVER SYSTEM.

1. The works of this system described in detail in previous reports are as under :—

I.—*Wághad Tank*.—Is a storage reservoir for supplementing the natural river supply of the following canals and is nearly completed. It has been for six years in partial operation, to the extent now of fully one-third the sanctioned capacity.

II.—*Páلكhed Canal*.—A new work in operation since 1873-74. The tail portion of the main distributary and some minor branches are not yet constructed, and need not be begun till the Wághad Tank is brought more fully into operation.

III.—*Ojhar Támbat Canal*.—An old native work improved in 1874-75. The canal was extended for a length of $2\frac{1}{2}$ miles, but the extension was not completed; the extended portion was brought into operation during the year. Further extension is deferred, as per No. II above.

IV.—*Waddáli Canal*.—An old native work improved in 1869, and practically completed.

2. The waste weir of the tank was running for 74 days and the tank filled easily enough; but the natural river supply for the canals was scanty, and except for the Waddáli Canal, for which river supply nearly sufficed throughout the year, the tank supply had to be used during the hot weather and again from 10th February 1891 to the 24th June 1891.

3. The total draw-off from the tank from 1st April 1890 to 5th June 1890 and again from 10th February 1891 to 31st March 1891, was 143 million cubic feet, of which 114 million cubic feet were measured as passed through the outlet and 4 million cubic feet as leakage (used on the Páلكhed Canal), and the remainder 25 million cubic feet was lost by evaporation and absorption, making the loss during the first period of 66 days equal to 1.30 feet in depth on the average surface, and during the second period of 50 days equal to .80 feet in depth on the average surface.

4. The expenditure on Capital Account during the year was Rs. 3,144, viz.:—

(1) Wághad Tank	Rs. 2,762
(2) For Ojhar Támbat	„ 382

5. The undermentioned works were executed during the year :—

I.—*Dam Embankment*.—(Sanctioned level R. L. 141, rising to R. L. 143 at gorge):

(i).—*Gorge Embankment* was raised from R. L. 135 to R. L. 140 from chainage 4,550 to 4,850.

(ii).—*F'ank Embankment* has also been raised to R. L. 140 from chainage 4,550 to 5,187 and from 3,500 to 4,550.

(iii).—*Stone pitching Gorge Embankment*—portion has been completed.

(iv).—*Safety bank on top of Dam* has been pulled down and completed.
General.—Whole embankment nearly completed; only a small part of filling at gorge left to be done, to complete all that need be done at present or until the cut in waste weir is closed.

II.—*Outlet*:

(i).—*Outlet Embankment* has also been completed.

III.—*Ojhar Támbat Canal*.

(i).—Compensation for land taken up for canal extension.

(ii).—Irrigating outlets.

(iii).—Improvement and extension of the canal.

(iv).—Planting mango trees along the margin of the extended portion.

6. The mean rainfall during the year, as gauged at two stations, viz., Páلكhed at canal head and Niphád near the tail, was 24.12 inches, being 3 per cent. less than the average (24.83) inches of the previous 17 years.

7. The area irrigated during the year under the (three) canals was 2,227 acres, as compared with 1,989 acres applied for. The difference is due to the areas in applications being only approximate.

8. The following tables show :—

(1) the areas irrigated and assessments of each canal during the year, and

(2) similar average figures of the previous four years.

1890-91.

Canals.	AREAS.			ASSESSMENT.		
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pálkhed Canal	1,128	608	1,731	4,977	1,385	6,362
Wadáli Canal	148	155	303	525	314	839
Ojhar Támbat Canal	141	52	193	620	125	745
Total	1,417	810	2,227	6,122	1,824	7,946

Average of four years 1886 to 1890.

Pálkhed Canal	792	884	1,676	3,989	1,792	5,781
Wadáli Canal	121	167	288	378	327	705
Ojhar Támbat Canal	138	136	274	624	259	883
Total	1,051	1,187	2,238	4,991	2,378	7,369

In addition to the acres shown above, 326 acres under the Wadáli Canal were assessed as irrigated under "mámul bágáit," the annual irrigation share for which amounts to Rs. 2,241.

9. The area irrigated in 1890-91 is 28 per cent. less than that of the previous year and half per cent. less than the average of the previous four years. In the case of the kharif areas there has been decrease on all the canals. The decrease in the kharif area on the Pálkhed and Ojhar Támbat Canals was due to some want of confidence in the tank supply, and that on the Wadáli Canal due to deficient supply in the Kádva River during hot weather. The decrease in the rabi area on the Pálkhed and Wadáli Canals was due to seasonable rainfall during the latter part of the monsoon.

On the Ojhar Támbat Canal it is expected that the area would extend when the tank supply is increased and shown to be assured, and when some improvements to the Ojhar Támbat distributary feeding the Ojhar Tāmbāt Canal are carried out.

10. The principal crops for the year are shown below with average figures for the five preceding years :—

Name of Crop.	For the year 1890-91.	Average of the five preceding years.	Increase.	Decrease.
Wheat	366	546	...	180
Ground-nut	643	542	101	...
Gram	145	166	...	21
Sugarcane	224	239	...	75
Vegetables	262	196	66	...

11. There is an increase of 18 per cent. during the year in the area of ground-nut ; this is attributable to the high price at which it was sold last year. There is a decrease of 33 per cent. in the area of wheat during the year, due to the seasonable rainfall during October and November ; that in the sugarcane was due to some want of confidence in the tank supply during hot weather.

12. The total maintenance charges on the (three) canals during the year amounted to Rs. 6,542, divided as follows :—

		Rs.
I.—Maintenance and Repairs	...	2,933
II.—Establishment	...	2,684
III.—Tools and Plant	...	100
IV.—Share of collection charges	...	449
V.—Indirect charges	...	376

Total ... 6,542

The increase principally on establishment is Rs. 1,686. It is due to the share of revenue establishment debited.

13. The total assessment during the year amounted to Rs. 7,974 (including assessment Rs. 28 on alluvial land above Pálkhed Canal) and the total realizations to Rs. 8,991. The outstandings, Rs. 4,001, at end of the year are accounted for as under :—

	Rs.
(1) Rabi assessment amounting to ... sent for realizations after the close of the year.	1,824
(2) Balance of the current year's kharif assessment (including the balance Rs. 14-5-10 on account of assessment on alluvial land for 1890-91)	2,177
Total	4,001

Besides direct water-rates, revenue is also obtained from the following sources :—

	Rs.
(1).—Plantation and other canal produce	57
(2).—Rent of buildings	13
(3).—Alluvial (<i>gálpér</i> land)	28
(4).—Sale of water...	2
(5).—Enhancement of land assessment	594

14. The total cost of crop measurement, &c., is given as below :—

Name of Canal.	Area measured.	Total cost of measurement.
	Acres.	Rs.
Pálkhed Canal	1,731	165
Wadáli Canal	303	36
Ojhar Támbat Canal	193	20
Total	2,227	221

or 1 anna and pies 7 per acre irrigated.

15. The duty of water on the three canals varied per cubic foot per second from 30 to 50 acres during hot weather, 70 to 200 acres during the kharif season, and 80 to 150 acres during the rabi season. Observations for ascertaining how much water is necessary to mature certain crops are still incomplete. Arrangements will, however, be made to obtain accurate and reliable results in future.

16. *Leakage experiments.*—Five experiments were made on the three canals : two on the Pálkhed Canal, two on the Ojhar Támbat Canal (one in each season), and one on the Wadáli Canal.

On the Pálkhed Canal there was a loss by leakage and evaporation of nearly 44 per cent. of the supply during kharif and of 52 per cent. of the supply during rabi.

On the Ojhar Támbat Canal there was a loss of nearly 50 per cent. of the supply during kharif and 44 per cent. of the supply during rabi.

On the Wadáli Canal there was a loss of 50 per cent. of the supply.

Before taking observations for leakage experiments all the irrigating outlets were closed. Gaugings were made with ordinary floats and were read in each mile. The only feasible way of reducing leakage seems to be to keep the canals clear of silt and weeds. No other precautions seem practicable, unless in the way of managing all outlets better, escapes included.

17. *Canal closures.*—There were 10 closures in all during the year for clearance of silt and aquatic plants. Of these, six were on the Pálkhed Canal and three on the Wadáli Canal and one on Ojhar Támbat Canal, aggregating 27, 12 and 3 days respectively.

18. The total number of trees standing on the canals at the close of the year was 11,720 : of these the principal were as under :—

Names of Trees.				Number of Trees.	Remarks.
Bábul	...	...	...	9,201	
Mango	...	...	...	717	
Nimb	...	...	...	499	
Moho	...	...	...	635	

The expenditure on plantation during the year was Rs. 142 from revenue account. The total expenditure to date is Rs. 2,182 from Capital Account and Rs. 3,324 from Revenue Account.

(8).—PRAVARA RIVER WORKS—LÁKH CANAL.

1. The area irrigated during the year was 434 acres, of which 240 acres were kharif and 194 acres were rabi crops. The total shows an increase of 112 acres on the area of the last year. The increase is due to the increased length of canal in operation and to insufficient rainfall.

Comparison of area applied for and irrigated.

2. The following statement compares the area applied for and irrigated during the year :—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890-91	369	240	197	194	566	434	129	3	132

The difference is due to timely and favourable rainfall in September 1890, which probably induced the cultivators not to resort to canal water previously applied for.

The area applied for but not irrigated is 30 per cent. of the area irrigated.

Water-rate assessment. 3. During the year the water-rate assessment amounted to Rs. 1,250, detailed as below :—

					Rs.
Kharif	...	...	...	...	802
Rabi	...	...	...	...	448

The total amount of the assessment in the last year was Rs. 1,259; there is, therefore, a decrease of Rs. 9, or 1 per cent.

4. The incidence of water-rate per acre was Rs. 2.88 against 3.91 in the previous year, which is due to the decrease in area of hot weather and perennial crops.

Water-rate per acre.

5. The capital expenditure during the year amounted to Rs. 1,601, and was incurred in constructing a regulator at 5 miles and 4,370 feet and in additions and alterations to inspection bungalows at Pachegaon and at Malunja. The bungalow at Malunja is incomplete.

Capital Account,

Working expenses.

6. The working expenses of the year were as follows :—

				Rs.
Maintenance and repairs	...	...	...	2,090
Share of establishment	...	...	...	1,192
Tools and plant	...	...	...	102
Share of collection charges	...	...	...	47
Indirect charges	...	...	...	167
Total				3,598

The working expenses of the last year amounted to Rs. 4,306. The rate of working expenses this year per mile of main canal open is Rs. 225, and per acre irrigated Rs. 8.29.

Water-rates.

7. The old water-rates were brought into force in 1839-90.

8. The total cost of measuring 434 acres during the year was Rs. 71, or two annas and seven pies per acre, against Rs. 72 or three annas and seven pies per acre last year.

Cost of measurement.

9. The duty of water per cubic foot per second varied on the average from 3 to 27 acres in the hot weather, from 2 to 12 acres in the monsoon, and from 17 to 27 acres in the

Duty of water.

rabi season.

In the hot weather the canal was in operation for 6 miles and the area irrigated was small. In monsoon and rabi seasons the canal was in operation for 16 miles and the area was not irrigated as anticipated owing to timely and favourable rainfall. Besides, much water is wasted by percolation from 9th to 13th mile, as the line runs through mooram, and consequently a large discharge is required at the canal head in order that it may reach the tail, and this is also one of the causes of the poor duty of water.

10. The rainfall during the year, as gauged at Malunja, was 15.82 inches, or 10.35 inches less than the average during the last five years.

Rainfall.

11. The river supply was abundant in the monsoon and cold weather.

River supply.

It began to fail in December, when an earthen dam 2 feet high was put on top of the weir as usual to increase the backwater during the hot weather.

Plantations.

12. At the end of the year the number of trees on this canal was 18,097. The number of principal kinds were :—

Bábul	...	12,220	Mango	...	655	Nimb	...	2,293
Nimbhara	...	64	Jámbul	...	948	Bor	...	501
Bakan	...	74	Divi Divi	...	19	Tamarind	...	38
Bambu	...	282	Melinglonia	...	27	Sandal	...	19
Moho	...	3	Siris	...	14			

The total number of miscellaneous trees was 940. The total number last year was 18,359. The reduction in the number of mango, nimb and jámbul trees is due to the attack by white ants and *bhirur*.

(9).—MUTHA CANALS.

1. The maximum flood in Lake Fife during the year occurred on 11th July 1890, on which date the water rose to a height of 4'50 feet above the finished or permanent crest of the waste weir, and at this level the water surface was within 7'50 feet of the top of the dam.

This flood level is within 1'50 feet of the estimated maximum flood and 1'30 feet lower than the flood of 7th July 1882, which was the highest yet recorded. At the commencement of the year, 1st April 1890, the level of water in the lake was 18'53 feet above the sills of the canal sluices; the minimum level was reached on 15th June 1890, when the depth of water was 8'50 feet above the sill of outlet. Owing to rain falling in the Gháts the water began to rise rapidly from 17th June and flowed over the waste weir on 21st June 1890, and the overflow was continuous from that date up to the period in which the standards and planks were fixed for the purpose of increasing the storage. The iron standards and first row of planks were fixed in position on the crest of the waste weir on 26th September; subsequently others were added, and ultimately water was stored to a height of 31'99 feet above the sill of the sluices on 12th November 1890, i.e. nearly 2'99 feet above the permanent weir crest level; this is 0'76 less than the previous year. This deficiency was due to less run-off in September owing to light rains, but was subsequently made up when heavy rains fell in November.

The expenditure of water from the storage commenced on 13th November, the water level reached the permanent or finished weir crest level on the 27th December 1890, and at the close of the year, 31st March 1891, stood at 18'69 feet above the sills of the canal sluices, or 0'03 feet higher than on the corresponding date of last year.

Assessments of revenue.

2. During the year under review, the assessments amounted to Rs. 2,07,159, detailed as follows:—

	Rs.
Water-rates	1,10,000
Sales of water	1,387
Water-supply of towns	85,936
Plantations and other canal produce	1,323
Water-power	3,600
Rents of buildings	122
Miscellaneous	4,291
Total	2,07,159

The total amount of assessments in the previous year was Rs. 2,20,425; there is, therefore, a decrease of Rs. 13,266, or 6'02 per cent.; the decrease is principally in rabi and is due to the very favourable rainfall. There was heavy rain in the first half of October, which was favourable to the sowing, and again in the first half of November and December, respectively, so that canal water was rendered unnecessary.

3. The area irrigated during the year was 11,201 acres, of which 7,736 were kharif and 3,465 rabi crops: the total shows a decrease of 2,137 acres as compared with the area irrigated in the previous year, or 16 per cent. The slight increase of 83 acres in the kharif season was due to later replenishment in the lake than in the previous year and consequently there was more water in the lake at the commencement of the dry season. The decrease of 2,220 acres in rabi was due to the very favourable rainfall as explained in the latter part of para. 1 *ante*.

4. The revenue derived from water-supply of towns amounted to Rs. 85,936, showing a decrease of Rs. 1,585 on that of the previous year and is due to the disconnection of Sappers and Miners lines, they being now supplied from the Páshán system: the water-rates, during the previous year, assessed on account of these lines, were Rs. 2,114; there is therefore an actual increase of Rs. 529.

276,764,620 gallons of water were supplied from the canal for the Poona City water-supply at a charge of Rs. 10,565, Rs. 10,000 of this sum being the fixed charge leviable for any quantity taken not exceeding 750,000 gallons a day, and the remainder, Rs. 565, being on account of water taken in excess of that amount at the rate of 3 annas per 1,000 gallons.

5. The average daily consumption of water in the Cantonment and Civil Station of Poona was 742,875 gallons during the year. Taking the population at 32,247 as per census taken in February 1891, the average consumption per head per diem comes to 23·04 gallons.

6. The working expenses of the year amounted in all to Rs. 79,826, of which Rs. 43,066 are debitable to the maintenance of Working expenses. irrigation and Rs. 36,760 to the maintenance, &c., of the water-supply; the latter amount includes expenditure incurred in pumping done by steam and water-power.

The cost of the maintenance of the irrigation works, Rs. 43,066 against Rs. 46,578 in the previous year, represents a rate for maintenance, administration, &c., of Rs. 489·35 per mile of main canal opened, and Rs. 3·84 per acre irrigated.

7. Deducting the total working expenses Rs. 79,826, and Rs. 372, the amount of remission and refunds, from the total earnings Rs. 2,07,159, the net profit from the work amounts to Rs. 1,26,961, or 2·01 per cent. on Rs. 63,07,130, the total entire capital outlay to the end of the year.

8. The areas irrigated were ascertained by actual measurements, the greater part of which were taken by measurers specially Crop measurements. entertained for the purpose and the remainder by an inspector, when time could be spared from his ordinary work, and from 9 to 12 per cent. of the area was checked by the subordinate in charge.

The cost of measurements amounted to Rs. 1,080, or at the rate of 1 anna and 6 pies per acre.

9. The highest duty of water during the months in which no rain fell was obtained in January when the area irrigated was 5,918 acres and the average discharge 103·55 cubic feet per second, giving a duty of 57·15 acres per cubic foot per second, and the lowest was in May when the area irrigated was 4,157 acres and the average discharge 108·58 cubic feet per second, giving a duty of 33·29 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for other seasons owing to rain having fallen and the canals being single-banked.

10. The rainfall of the year along the canal varied considerably. The maximum was 39·39 inches at Poona and the minimum 13·11 inches at Kásurdi.

11. The characteristics of the rainfall last year were that the monsoon set in good time at Khadakvásla, resulting in Lake Fife filling on 21st June. Also there were heavy rains throughout the district in October, November and December, resulting in a great diminution in the demand for water for rabi crops.

12. A statement is appended giving the particulars of the water issued gratis or at reduced rates to various institutions in accordance with the orders issued by Government from time to time. From it it will be seen that local institutions have received water during the year at Rs. 5,694 less than the normal rates.

If the above amount, *viz.* Rs. 5,694, be added to the net revenue shown in paragraph 6 *ante*, making the total net revenue Rs. 1,32,655, the percentage of net revenue on total capital expenditure becomes 2·10.

13. The following is the comparison of areas applied for and those actually irrigated:—

	AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mutha Right Bank Canal ...	6,702	5,088	11,790	7,151	3,379	10,530	449	...	...	1,709
Mutha Left Bank Canal ...	590	154	744	585	86	671	...	...	5	68
Total ...	7,292	5,242	12,534	7,736	3,465	11,201	449	...	5	1,777

The falling off in the irrigated area, as compared with the applications in the rabi season in respect of both canals, was due to heavy rainfall after applications were received, which rendered the canal water unnecessary. The other figures do not call for special remarks.

14. Remissions amounting to Rs. 135 have been granted during the year, of which Rs. 3 are on account of a bad debt, the assessee being dead, and Rs. 83 to erroneous assessment, and the remainder to reduction in the original assessment for leakage water.

15. Refunds amounting to Rs. 1,230 were made during the year, of which Rs. 188 are due to reduction of leakage rates, Rs. 29 on account of erroneous assessments, Rs. 66 on account of short water-supply, and Rs. 947 rebate given to Indian Paper Mills Company for 98 days, *i.e.* 78 days being short of 60 horse-power and 18 days canal closure.

16. At the end of the year the number of trees on the Right and Left Bank Canals and on the headworks was 60,299. The number of principal kinds were:—

Bábul	...	...	...	...	45,764
Jámbul	...	...	...	...	777
Bor ...	...	...	...	...	860
Shindi	...	...	...	...	3,657
Mango	...	...	...	...	3,262
Bámbu	...	...	...	...	590
Umbar	...	...	...	...	441
Nimb ...	...	...	...	...	1,148
Sandal	...	...	...	...	334
Hiwar	...	...	...	...	503
Soundad	...	...	...	...	868
Tamarind	...	...	...	...	205

The number of miscellaneous trees was 1,885.

17. The following gives the loss by evaporation and leakage during the year:—

Gaugings were taken in the months of April, May and June 1890 and January, February and March 1891, or a total number of days 158. During this period the loss amounted to 503,355,094 cubic feet, or $\frac{1}{4}$ th nearly of the total capacity of the lake above outlet level.

The loss by evaporation and leakage on the Mutha Right Bank Canal (no gaugings have been taken for the Mutha Left Bank Canal) from miles 1 to 30, is very nearly 3 cubic feet per mile, with a discharge of 150 cubic feet at head.

POONA WATER-SUPPLY.

Statement showing Water-supplies given gratuitously or at reduced rates during 1890-91.

To whom supplied.	Quantity supplied.	Amount paid.	Value at 6 annas per 1,000 gallons.	Difference between 4 and 3.	Remarks.
1	2	3	4	5	6
		Rs. a. p.	Rs. a. p.	Rs. a. p.	
The Civil Surgeon, Sassoon Hospital ...	688,900	129 5 9	258 11 5	129 5 9	
Do. do. ...	622,840	116 12 5	233 8 10	116 12 5	
The Superintendent, B. J. Medical School.	469,440	88 0 11	176 1 10	88 0 11	
The Superintendent, Lunatic Asylum ...	443,418	83* 2 4	166 4 8	83 2 4	
The Secretary, Cantonment Committee (New Modikhana)...	1,194,376	224 0 3	448 0 6	224 0 3	
Do. do. (Beef Market) ...	1,334,662	250 4 0	500 8 0	250 4 0	
Do. do. (Malcolm Tank) ...	1,335,662	250 7 0	500 14 0	250 7 0	
Do. do. (Mutton Market)...	1,335,662	250 7 0	500 14 0	250 7 0	
Do. do. (Ashurkhana)...	1,444,000	270 12 0	541 8 0	270 12 0	
Do. do. (Butler Mohla)...	1,456,000	273 0 0	546 0 0*	273 0 0	
Mr. Bezooji Jijeebhoy ...	56,960	10 10 10	21 5 8	10 10 10	
Convent School ...	271,900	50 15 10	101 15 8	50 15 10	
Jamsetji Fountain ...	1,095,000	.....	410 10 0	410 10 0	
Howds in Booty Street ...	4,380,000	.....	1,642 8 0	1,642 8 0	
Bazar Reservoir ...	1,460,000	.....	547 8 0	547 8 0	
Malcolm Tank ...	2,920,000	.....	1,095 0 0	1,095 0 0	
Total ...				5,693 8 4	

The savings to the Military and other departments on account of the difference between the amount formerly expended by them on account of their water-supply under the old system and the amount paid by them last year to the Irrigation Department in water-rates amounted to Rs. 22,364 against Rs. 30,493 last year. The difference is due to the Sappers' and Miners lines, the saving on account of which was Rs. 1,995 last year, being transferred to the Pashan system.

Statement showing savings to Government through the introduction of Mutha Canal Water into the Poona Cantonment for the year 1890-91.

Item Number in the General Statement of Mutha water-rates.	Item.	ANNUAL COST OF 1890-91.						REMARKS.
		Ehisti Estab-lishment prior to Water supply.	Ehisti Estab-lishment after Water supply.	Ehisti Saving.	Water-rates.	Saving.	Excess.	
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
	<i>Military Department.</i>							
1	Controller of Military Accounts ...	264 0 6	.....	264 0 6	80 2 6	183 15 6	.....	
2	Ordnance Department ...	264 0 0	.....	264 0 0	80 3 10	183 13 2	.....	
3, 15, 20	Executive Commissariat Office, Bakery Storeyard and Depot Transport Office, Government Cattle Farm at Wanorje.	1,730 14 1	.....	1,730 14 1	1,380 0 1	.....	159 2 0	
4	Military Prison ...	367 0 0	.....	367 0 0	123 0 5	243 15 7	.....	
5	Staff Hospital ...	312 0 0	.....	312 0 0	139 8 6	173 12 4	.....	
6	Quartermaster General's Office ...	125 0 0	.....	125 0 0	72 11 8	120 4 0	.....	
7	European Regiment at Wanorje ...	30 0 0	.....	30 0 0	78 10 10	.....	48 10 10	
8	Do. do. at Ghorepadi ...	5,238 0 0	864 9 0	4,424 0 0	4,307 1 10	228 14 2	.....	
9	Native Light Cavalry, including Hos- pital.	5,964 0 0	840 0 0	4,224 0 0	3,771 5 9	462 10 3	.....	
10	Do. do. at Ghorepadi ...	634 0 0	618 0 0	24 0 0	2,442 14 6	.....	2,566 14 6	
11	B. F. N. I. Line and Hospital ...	1,232 10 0	1,115 8 0	178 2 0	3,176 11 6	.....	2,998 9 6	
12	L. F. N. I. Line and Hospital ...	1,090 0 0	912 0 0	168 0 0	3,740 0 4	.....	3,572 0 4	
13	Centre N. I. Line and Hospital, Sappers and Miners ...	1,060 0 0	929 0 0	151 0 0	3,145 15 11	.....	2,997 15 11	
14	Rest Camp ...	.....	.....	.....	.....	.....	.....	Regiment transferred to Kirkee. No water was given to Rest Camp during the year.
	Total Military Department ...	17,500 8 1	6,308 8 0	12,232 0 1	23,043 2 3	1,582 2 11	12,343 5 1	
	Carried over ...	17,500 8 1	6,308 8 0	12,232 0 1	23,043 2 3	1,582 2 11	12,343 5 1	

Item Number in the General Statement of Muha. water-rates.	Item.	ANNUAL COST OF 1890-91.						REMARKS.
		Bhisti Establishment prior to Water supply.	Bhisti Establishment after Water supply.	Bhisti Saving.	Water-rates.	Saving.	Excess.	
	Brought forward ...	Rs. a. p. 17,590 8 1	Rs. a. p. 5,506 8 0	Rs. a. p. 12,352 0 1	Rs. a. p. 22,043 2 8	Rs. a. p. 1,582 2 11	Rs. a. p. 12,343 5 1	
	<i>Civil Department.</i>							
4 & 13	Photodisco Office	72 0 0	.....	72 0 0	159 3 6	.....	87 3 6	
6	Lunatic Asylum	180 0 0	.....	180 0 0	83 2 4	96 12 8	.....	
8	Post Office	36 0 0	.....	36 0 0	45 9 0	.....	9 9 0	
11	Executive Engineer, Poona District, Bund Garden.	720 0 0	.....	720 0 0	391 1 8	222 14 4	.....	
2	Executive Engineer, Poona and Kirkee, (now Poona District, Military Works) Store and Office.	42 0 0	.....	42 0 0	52 8 1	9 7 11	.....	
2 & 7	Sassoon Hospital	576 0 0	.....	576 0 0	246 2 2	329 13 10	.....	
5	Superintendent of Police	60 0 0	.....	60 0 0	122 8 1	.....	72 8 1	
9	Deccan College	Water supply arrangement transferred to Pashia Scheme from 16th February 1890.	.....	.....	.....	.....	.....	
4	Executive Engineer, Poona & Kirkee (now Military Works, Poona District), Warehouse Storeyard.	21 0 0	.....	21 0 0	11 12 11	9 3 2	.....	
3	Executive Engineer, Poona District, (Council Hall).	144 0 0	.....	144 0 0	304 12 3	.....	160 12 3	
1	Executive Engineer, Poona District, Storeyard.	51 12 0	.....	51 12 0	27 7 6	24 4 6	.....	
8	College of Science, Poona	240 0 0	.....	240 0 0	500 0 0	.....	260 0 0	
9	Judge's Court	144 0 0	.....	144 0 0	135 15 1	40 0 11	.....	
	Total Civil Department ...	2,286 12 0	.....	2,236 12 0	2,038 2 7	838 10 3	590 0 10	
	Total Military Department ...	17,590 8 1	6,554 7 0	12,352 0 1	22,043 2 8	1,582 2 11	12,343 5 1	
	Total Civil Department ...	2,286 12 0	.....	2,236 12 0	2,038 2 7	838 10 3	590 0 10	
	Saving to Public Works Department on account of Bund Engineer.	33,367 0 0	.....	33,367 0 0	.....	33,367 0 0	.....	
	Savings to Government on account of water given to Rastia's aqueduct as per Government Resolution No. 486 of 10th December 1882.	.....	.....	.....	.....	.....	.....	No water was given to Rastia's aqueduct during the year.
	Total ...	53,244 4 1	6,554 7 0	47,935 12 1	25,081 4 10	35,787 12 2	12,933 5 11	
					Deduct Excess ...	12,933 5 11		
					Total Saving ..	22,854 7 3		

(10).—EKRUK TANK.

1. The rainfall for the year under report, gauged at Hiperga, was 24·37 inches against 33·63 inches during the previous year, but the replenishment was only ·73 of a foot below the waste weir; the storage was, however, more than sufficient for all demands.

2. The area irrigated during the year was as under :—

Year.			Kharif.	Rabi.	Total Area.
			Acres.	Acres.	Acres.
1890-91	...	...	1,836	763	2,599
1889-90	...	...	1,335	1,199	2,534

This represents an increase of 65 acres in the total area irrigated: owing to the favourable rains in November no water was required for jowari crops.

3. There would have been much more rabi irrigation from the main canal, had the canal been able to supply it. The maximum discharge is 30 instead of 70 cubic feet per second, and this quantity can only be sent down by careful watching of the canal day and night to prevent breaches.

4. The Shelgi aqueduct is a great drawback to the efficient working of the canal, the water-way under it being insufficient to carry off an ordinary flood, without heading up the water on the up-stream side, a heavy flood rising 6 inches over the parapets; it is also insufficient to pass the water required in the canal. Until, therefore, the canal is improved and enlarged in the first 8 miles, it cannot supply the quantity of water that would be used by the cultivators, if available.

5. The bed of the Shelgi nala has been scoured out to below the foundations of the aqueduct, and, therefore, there is danger of a collapse during a heavy flood.

6. The area applied for, as shown in the Irrigation operation statement and that actually irrigated, are shown below :—

	Kharif.	Rabi.	Total.
As per Irrigation operation statement ..	1,830	748	2,578
Actually irrigated ...	1,836	763	2,599
Increase over applications ...	6	15	21

7. The assessment during the year from all sources amounted to Rs. 23,515. Of this the water rates alone were Rs. 10,187 against Rs. 9,441 of the previous year, showing an increase of Rs. 746, which is due to the enhanced rates having been brought into force during the year.

The net revenue from all sources amounted to Rs. 24,818 as under :—

	Amount. Rs.
Water-rates ...	11,827
Plantations ...	7,481
Water-supply of town ...	3,421
Miscellaneous ...	2,089
Total ...	24,818

8. The incidence of water-rate per acre irrigated was 3·91 against 3·72 in the previous year.

9. A statement showing average discharge, area irrigated and assessment and reduced level of water, follows.

10. The irrigated area was measured by a measurer engaged for the purpose and checked by the subordinate in charge to the extent of ten per cent. The cost of this amounts to Rs. 492, or Re. 0-3-0 per acre irrigated.

11. Working expenses of the year, including direct and indirect charges, amounted to Rs. 13,824. The collection charges were Rs. 621, which, deducted from the total, gives a net expenditure in the department of Rs. 13,203, or Rs. 5-0-0 per acre irrigated and Rs. 53 per cent. of gross receipts, viz. Rs. 24,818.

12. Owing to these canals being made to catch the flood water during the rains, the annual recurring charges for clearance and bank repairs are much the same every year, and they cannot be reduced as it is necessary to execute the necessary repairs in order to allow water to pass for irrigation.

13. The tank and the canals being close to Sholapur, the plantations form a very considerable source of revenue. Bābul is generally grown with little supervision and is valuable both for firewood and for ordinary carpenter's use. A few mango trees are now beginning to bear fruit, and after a few years will yield a considerable revenue. The expenditure on plantation for the year amounted to Rs. 820, and the revenue derived to Rs. 7,481. The number of trees above and below 5 feet in height was 62,537 and 76,323 respectively on the 31st March 1891.

14. Observations were made during the year to determine the duty of water. The canals were regularly gauged and the following table gives the duty and average discharge from them during the year :—

Name of Canal,	Discharge Cubic feet per Second.	Average Area irrigated.						Average per Cubic foot per Second.
		12 months.	8 months.	4 months.	2 months.	Hot Weather Crop.	Total.	
Left bank L. L. Canal ...	18·94	349	472	254	269	38	1,382	A. g. 72 97
Left bank L. L. Canal ...	2·49	116	41	16	17	17	207	83 13
Right bank H. L. Canal ...	7·94	14	184	39	83	6	276	34 76

15. Where possible, the distributing channels had gauges fixed to find the quantity of water required to mature different crops, and the result is given below. A gauge was fixed for a sugarcane field, but that crop was removed before it ripened and the experiment failed.

Statement of experiments made during the year :—

Name of Crop.	* Area irrigated.	Cubic feet of Water required to mature the Crops.	Remarks.
	A. g.		
Pansali	1 0	290,275	During hot weather water was taken from 9th January to 10th May.
Do.	1 0	178,140	During rainy season water was taken from 28th June to 3rd November.
Rice, Suki	1 0	24,930	7 waterings were given from 1st July to 28th September.
Ground-nut	1 0	45,600	9 waterings were given from 21st June to 20th October.
Wheat, Bakshi	1 0	36,230	3 waterings were given from 29th December to 2nd February.

16. In the duty table given above, the quantity of water used by the Municipality, the Spinning and Weaving Mills and the Railway Department has been excluded.

17. The general results give a maximum duty of 78 acres per cubic foot per second in December 1890 and 20 acres in May 1890 on the low canal.

18. During the year only one rain gauge was maintained on the tank at Hiperga, and it was attended to by the karkūn on the tank without incurring any extra expenditure. The rainfall from June to November was 21·96, which represents 8,111 millions of cubic feet of water on the catchment area of 159 square miles. The run-off is 0·280 of the total rainfall.

19. The following gives the loss in evaporation and absorption during the year :—

	C. ft.
Total quantity of water for use in the tank during the year ...	4,718,891,123
Total quantity discharged through the canals or by leakage ...	973,024,704
Actual quantity in the tank on the 31st March 1891 ...	2,393,485,807
	3,366,510,511
Quantity lost by evaporation and absorption ...	1,352,380,612

Statement showing average Discharge, Area irrigated, Assessment, and reduced Level of Water on 5th June (as per G. M. No. 532-I, dated 4th September 1891).

Ekrnk Tank.	Year.	Average Dis-charge during the year.	ANNA IRRIGATED.						REDUCED LEVEL OF WATER ON 5TH JUNE.		REMARKS.
			Kharif.		Rabi.		* Total.		Reduced mean Sea-level.	Height of Water over Sill in feet.	
			Acres.	Assesment.	Acres.	Assessment.	Acres.	Assessment.			
Left Bank Low Level Canal.	1883-84.	13·75	787	3,426	896	942	1,183	4,268	1,514·507	31·15	The tank filled at the end of August and there was ample water.
Left Bank High Level Canal.		2·32	52	220	67	126	119	345	...	6·32	
Right Bank High Level Canal.		7·51	86	229	52	136	138	365	...	6·38	
			925	3,875	915	1,203	1,440	5,078			
Left Bank Low Level Canal.	1884-85.	18·75	1,063	3,824	1,594	2,465	2,647	6,389	1,514·487	31·13	The water in the tank was gradually reduced till 18th September 1884, when the S. L. was 1,510·017 and on 16th October the water rose to K. L. 1,519·207, and though the tank did not fill this year, the supply was ample.
Left Bank High Level Canal.		3·35	73	241	60	126	123	387	...	6·30	
Right Bank High Level Canal.		8·08	162	376	166	220	320	666	...	6·36	
			1,278	4,441	1,822	2,811	3,100	7,322			

Strut Tank.	Year.	Average Discharge during the year.	AREA IRRIGATED.						REDUCED LEVEL OF WATER ON 5TH JUNE.		REMARKS.
			Kharif.		Rabi.		Total.		Reduced mean Sea-level.	Height of Water over Sill in feet.	
			Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.			
Left Bank Low Level Canal.	1888-89.	18-00	1,453	4,330	650	1,291	2,123	5,627	1,513-487	30-13	On the 14th September the water fell to R. L. 1,511-907, but on 3rd October the tank filled and the waste weir began to flow.
Left Bank High Level Canal.		2-35	99	238	40	103	148	341	...	5-30	
Right Bank High Level Canal.		3-07	198	430	117	238	335	728	...	5-30	
			1,750	5,004	836	1,692	2,536	6,696			
Left Bank Low Level Canal.	1889-90.	17-01	1,212	3,736	452	907	1,664	4,633	1,513-077	31-72	This year the tank began to fill in the early rains and on 18th August the waste weir began to flow.
Left Bank High Level Canal.		3-09	125	320	15	33	140	553	...	6-39	
Right Bank High Level Canal.		7-30	303	527	69	147	262	674	...	6-95	
			1,530	4,773	536	1,087	2,066	5,860			
Left Bank Low Level Canal.	1890-91.	17-38	1,096	3,703	620	1,068	1,716	5,461	1,517-187	33-33	There was ample water in the tank and the waste weir flowed this year.
Left Bank High Level Canal.		3-99	126	554	19	36	145	590	...	9-00	
Right Bank High Level Canal.		7-11	135	337	113	263	253	600	...	9-06	
			1,357	4,634	757	1,367	2,114	6,651			
Left Bank Low Level Canal.	1891-92.	19-90	1,243	3,445	1,076	2,335	2,319	5,980	1,514-407	31-05	This year though there was replenishment in the tank during the rains, the water did not flow over the waste weir, and the highest point reached was on 2nd October, i. e., R. L. 1,519-067, and at the end of the year the water reached R. L. 1,518-207 and there was only 4-27 and 4-33 feet water over high level sluices.
Left Bank High Level Canal.		5-29	144	650	63	102	207	752	...	6-22	
Right Bank High Level Canal.		10-41	233	547	217	373	450	920	...	6-28	
			1,620	4,642	1,336	2,910	2,976	7,652			
Left Bank Low Level Canal.	1892-93.	19-81	1,323	5,403	789	2,554	2,118	7,967	1,510-777	27-42	On 4th July the water fell to R. L. 1,508-837, but these high level canals were closed for repairs; afterwards the rains brought more or less water into the tank. On 26th September the tank was full and the waste weir commenced flowing.
Left Bank High Level Canal.		1-38	...	2	130	563	130	570	...	2-59	
Right Bank High Level Canal.		4-47	6	29	280	885	288	914	...	2-85	
			1,335	5,434	1,199	4,007	2,534	9,441			
Left Bank Low Level Canal.	1893-94.	20-21	1,358	5,508	651	2,101	2,009	7,609	1,514-757	31-40	Owing to the light rains the water went down to R. L. 1,513-607 on 4th August; but the S. E. monsoon brought in ample supply; the waste weir did not flow this year.
Left Bank High Level Canal.		2-51	199	1,320	9	34	208	1,354	...	6-57	
Right Bank High Level Canal.		7-95	279	845	103	319	382	1,164	...	6-63	
			1,336	7,733	763	2,454	2,599	10,187			

(11).—KRISHNA CANAL.

1. Certain minor works were carried out on the Krishna Canal at a total capital cost of Rs. 1,645, which also includes compensation for land paid during the year.

2. The rainfall of the year, as gauged at the centre of the area irrigated by the canal, was 29-30 inches as compared with 34-68 inches during the previous year. The average of the previous ten years was 29-80 inches.

3. The area irrigated was 1,736 acres of kharif and 2,214 acres of rabi, or a total of 3,950 acres, which is an increase of 218 acres, or nearly 6 per cent. on the total area irrigated during the previous year.

The area irrigated was 15 per cent. of the area under command against 14 per cent. of the year before; and the irrigated area, as actually measured, was 16 per cent. in excess of that applied for.

4. The water-rate assessments of the year amounted to Rs. 32,708, detailed below, as compared with the two preceding years:—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1888-89...	...	22,268	5,236
1889-90...	...	22,241	7,364
1890-91...	...	23,630	9,078
			32,708

A comparison shows that the assessment has been steadily increasing during the three years, the increase in the year under report being $10\frac{1}{2}$ per cent. over the assessment of the previous year and nearly 18 per cent. in excess of that of 1888-89.

The receipts during the year from all other sources, including plantation and supplying water to the municipal town of Karád, amounted to Rs. 1,883, thus bringing the gross revenue of the year up to Rs. 34,591.

5. The working expenses, including all direct and indirect charges, amounted to Rs. 13,287 during the year, which, as compared with the previous year, shows a decrease of Rs. 3,940, due apparently to the extensive silt clearance carried on in the previous years having just been completed. The working charges for the year represent a cost of Rs. 218 per mile of canal and distributaries worked, and Rs. 3.36 per acre irrigated, and are 38 per cent. of the gross revenue (as compared with 53 of the previous year), thus showing a net profit of Rs. 21,304, equal to a rate of 3.25 per cent. on the capital outlay of Rs. 6,56,209.

6. The average water-rate per acre was Rs. 8.23 for the year against Rs. 7.9 of the year before. This shows an increase not only on the last year's rate but also on that of the year 1888-89, indicating that the low incidence of the last year was due not so much to the falling off in the cultivation of higher rated crops as to rotation and other accidental causes.

7. The cost of measurement of the irrigated area was Rs. 400 during the year, giving the rate of one anna seven pies per acre measured.

8. The maximum duty of water was 49 acres per cubic foot per second in December 1890 and minimum 20 in August 1890.

9. The number of trees on the canal at the end of the year was 24,902. Besides these there were 2,270 saplings below the standard girth.

10. The number of trees cut and sold during the year was 873, realizing a sum of Rs. 973, the total expenditure on plantations amounting to Rs. 552 during the year.

MINOR WORKS AND NAVIGATION.

(12).—KHA'RI CUT.

1. The rainfall during the year was 22.78 inches against 24.89 inches during the previous year, the average of the last five years being 24.12 inches. The Chandola Tank, which is the main storage reservoir of the irrigation, was not full until the middle of August, in consequence of which there was some delay in transplanting rice, and the area brought under rice cultivation was smaller than usual. After the middle of August there was more than sufficient water for the rice area already sown, but it was then too late in the season for any appreciable extension.

2. The area irrigated during the year shows a decrease of 946 acres from that of the previous year. The figures are as follows:—

				Acres.
1889-90	...	...	...	2,271
1890-91	...	...	...	1,325

3. The assessments, excluding remissions and free grants, amounted to Rs. 6,078, as compared with Rs. 5,470 of the previous year, while the remissions for the year amounted to Rs. 981 and the free grants to Rs. 1,501. The working expenses of the year, including establishment charges, &c., amounted to Rs. 4,138 against Rs. 3,751 of the previous year, the rate being Rs. 3.12 per acre.

4. The area under irrigation was measured by the establishment specially employed for the purpose at a total cost of Rs. 124, or nearly $1\frac{1}{2}$ anna per acre.

5. The average water-rate during the year was Rs. 4.58 per acre as compared with Rs. 2.40 of last year, owing to larger remissions in 1889-90.

6. The actual supply abstracted from the Khári river during the kharíf season at the head of the Khári Cut was 21.51 cubic feet per second, and the

area irrigated was 1,325 acres *plus* the area assessed on the Chandola Tank (namely 242 acres), making a total of 1,567 acres, which gives a duty of 73 acres per cubic foot of discharge.

(13).—HARTA'LA TANK.

1. The tank was empty at the beginning of the year and received no replenishment until August 6th: up to this date nearly 15 inches of rain had fallen without bringing the tank water up to the outlet level. On the day of the first replenishment the rainfall at the tank dam was 3·25 inches and the level of water in the tank rose to 3·15 feet above the outlet. The highest water level reached during the year was 3·90 feet and the corresponding storage 20·50 millions cubic feet.

2. The year's rainfall was 29·93 inches against 28·47 inches in the previous year and 23·26 inches, the average of the past 17 years. The monsoon rainfall from June to September was 27·91 inches. The rabi rainfall was 1·78 inches.

3. The area irrigated was 60 acres, out of which 1 acre rice dadki, and 1 acre chillies were watered in the kharif season, and 57 acres wheat and 1 acre gram in the rabi season.

4. The assessments amounted to Rs. 898-11-6 as under:—

				Rs.	a.	p.
Water-rates	...	...	...	...	121	10 0
Other sources	...	...	...	...	777	1 6
Total				...	898	11 6

The large factors of the revenue from other sources are, protective rate of Re. 1 per acre on land irrigable from the tank—Rs. 412-6-0, and the revenue from the cultivation of the unsubmerged portion of the tank bed—Rs. 340-3-6.

5. The revenue realized during the year amounts to—

				Rs.	a.	p.
Water-rates	...	...	...	...	151	11 1
Other sources	...	...	...	...	808	10 4
Total				...	960	5 5

6. The remissions sanctioned during the year amounted to Rs. 66-1-8—the unrecoverable revenue from the Mhars shown as outstanding in the last report. Part of the amount, *viz.* Rs. 22-6-1, was recovered prior to the receipt of the sanction. The balance, therefore, has only been remitted, *viz.* Rs. 43-11-7.

7. There were no outstandings from water-rates at the close of the year except the rabi demands, Rs. 116-4-0, sent for realization after the end of the year. A small amount of Rs. 2-8-0 due from miscellaneous revenue remains unrealized.

8. The working expenses amount to Rs. 649, of which the amount of expenses in the Public Works Department is Rs. 604; the balance Rs. 45 is the charge for revenue collection by the Civil Department. More than half the charges, *viz.* Rs. 306, were on account of the refund of revenue from land assessed though not actually watered in the past years.

9. The following is the revenue result by comparing the working expenses with the assessments and realizations:—

				Rs.
Assessments	...	...	...	899
Revenue charges	...	...	...	649
Gain				250
Realizations	...	...	...	960
Revenue charges	...	...	...	649
Gain				311

10. The area applied for was 4 acres kharif and 58 acres rabi against actually assessed 2 acres kharif and 58 acres rabi. The difference in the kharif figures is due to less cultivation owing to scarcity of water in the tank.

11. There were no special observations for the duty of water. The duty according to usual observations was—

	Acres.
Kharif	25.00
Rabi	75.32

12. The old scale of water-rate and that introduced in 1889 are given below :—

				Old Scale.			New Scale.		
				Rs.	a.	p.	Rs.	a.	p.
I.—Perennial...	...	...	...	8	0	0	10	0	0
II.—Eight months	...	...	...	3	0	0	4	0	0
III.—Four months and rabi	...	...	...	1	4	0	2	0	0
IV.—Monsoon dry	...	...	...	0	4	0	1	0	0
V.—Hot weather	...	...	...	4	0	0	4	0	0

13. The areas assessed under this classification during the year is given below, together with the assessment thereon under the old rates :—

				Area.	Assessment.	Assessment under old rates.
				Acres.	Rs.	Rs.
I.—Perennial	...	...	...	.....	.....	.....
II.—Eight months	...	...	...	1	4	3
III.—Four months and rabi	...	...	...	58	117	73.
IV.—Monsoon dry	...	...	...	1	1	1
V.—Hot weather	...	...	...	.....	.....	.....
				60	122	76½

There has been a gain of Rs. 46 under the existing scale in the revenue of the year. The decrease in the area irrigated is due to short storage in the tank and has no connection with the increase in rate.

14. The calculated loss by evaporation and absorption is given below :—

	Feet.
Kharif season, April to September 1890, 25 days	0.25
Rabi season, October 1890 to January 1891, 121 days	2.34
Hot season, February and March, 31 days	1.07
Average daily loss... ..	0.195

(14).—MHASWA TANK.

1. The tank contained 67.15 millions cubic feet of water at the beginning of the year and filled on 18th of June 1890.

2. The rainfall of the year was 31.38 inches, about 7 per cent. more than the average fall of 29.59 inches of the past 13 years.

3. The area irrigated during the year was 3 acres perennial, 10 acres eight months, and 175 acres rabi crops: total 188 acres, distributed as under :—

	Acres.
Kharif season	13
Rabi season	175
	188

4. There was no monsoon dry-drop irrigation, the monsoon rainfall during the year from June to September being 27·62 inches against 22·43 inches in the previous year. The rabi fall was also greater, and although there has been an increase in gram, the wheat irrigation fell off from 176 to 149 acres.

The revenue assessed was :—

				Rs. a. p.
Water-rates	...	...	...	422 3 0
Miscellaneous	...	...	...	234 4 6
Total				656 7 6

5. The realizations amount to—

				Rs. a. p.
Water-rates	...	...	...	424 14 0
Miscellaneous	...	...	...	234 4 6
Total				659 2 6

6. The outstandings amount to—

				Rs. a. p.
Unrealized balance of former demands	...	...	...	28 13 0
Rabi demands of 1890-91 sent for realization after the close of the year	...	...	...	349 10 0
Total				378 7 0

The actual unrealized balance is Rs. 29-1-0, but owing to an over-collection of annas 4 it appears at Rs. 28-13-0 shown above. The unrealized balance has been recovered after the close of the year and there is actually no outstanding now.

7. The working expenses in the Public Works Department are Rs. 1,636, and, inclusive of the collection charges, Rs. 1,657, slightly in excess of those of the previous year. The establishment charges are Rs. 723 against Rs. 421 in the previous year. This increase is due to the charges on account of revenue establishment actually employed on works having been included under Establishment instead of under Works. In the latter head a corresponding decrease is observed.

8. The cost of measurements per acre of area irrigated is Re. 0-1-7 and total cost Rs. 18-12-0.

9. The areas applied for compare as shown below with areas actually assessed :—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
Applied for	...	18	178	196
Assessed	...	13	175	188
Difference	...	—5	—3	—8

The actual irrigation is four per cent. less than the area applied for ; the difference is due mainly to an application for water having been cancelled.

10. There were no special observations for the duty of water. The results at the usual process, as shown in Statement I—E, are :—

				Acres.
Kharif duty	...	...	...	41·93
Rabi „	...	...	...	108·70

11. The scale of water rates is—

				Rs. a. p.
I.—Perennial	...	...	...	10 0 0
II.—Eight months	...	...	...	4 0 0
III.—Four months and rabi	...	...	...	2 0 0
IV.—Monsoon dry	...	...	...	1 0 0
V.—Hot weather	...	...	...	4 0 0

Under these rates the area irrigated would be classified as under:—

	Area.	Assessment at the prevailing rates.	Assessment at the old rates.
	Acres.	Rs.	Rs.
I.—Perennial	3	32	25
II.—Eight months	10	40	30
III.—Four months and rabi	175	350	216
IV.—Monsoon dry ... ..	.....	.....	.....
V.—Hot weather ... ..	.....	.....	.....
Total ...	188	422	271

The gain under the prevailing rate, as seen from the above table, is 55 per cent. of what the revenue would have been under the rates in force prior to 1889-90. This increase in rate cannot, however, be said to be the cause of falling off in the area irrigated. The villagers whose land is under command of the tank do not take advantage of the supply of water at hand excepting in unfavourable years, and the supply in the tank is too uncertain to encourage the cultivation of perennial crops.

12. The following figures show the calculated results of evaporation and absorption:—

		Feet.
Kharif season, April to September, 101 days	...	5.52
Rabi season, October to January, 121 days	...	3.00
Hot weather, February and March, 59 days	...	1.85
Total	...	10.37

Average daily evaporation and absorption during the year ...0369.

(15).—JA'MDA CANALS.

1. These canals have been in operation for 24 years.

2. The river-supply showed signs of failure early in the rabi season of the past year. It was necessary, therefore, to restrict the perennial and hot weather irrigation to fields protected by wells. The river actually failed in May, but only one application for remission was made, and in this case the owner's well also failed. The rabi supply was a little less than in the previous year, but was sufficient to meet requirements. The general river supply was the worst on record excepting 1877-78, which was practically no worse.

3. The rainfall during the year, as gauged on and near the canals, is shown in the following table in comparison with the average and last year's fall:—

No.	Stations.	1889-90.	1890-91.	Average.
		Inches.	Inches.	Inches.
1	Jāmda	19.15	24.98	26.45
2	Kolgaon	18.10	29.37	27.68
3	Bhadgaon Farm	22.56	29.46	30.19
4	Do. Katcheri	24.71	28.27	31.42

The first station is at the head, second in the centre and the third and fourth at the tails of the canals. On an average the rainfall, as gauged at the canals, shows an increase of 33 per cent. on that of the previous year. But as regards the river supply, the Kalwan gauge at the head of the Girna gave only 14 per cent. more rain than in the previous year.

The monsoon rainfall at Kalwan from June to October was 21·73 in 1890-91 against 19·11 in 1889-90, the average for the last 10 years being 27·25.

4. The area irrigated during the year was 1,343 acres and compares with the average and the area irrigated in the previous year thus :—

Seasons.				1889-90.	1890-91.	Average up to 1889-90.
				Acres.	Acres.	Acres.
Kharif	...	...	...	743	341	543
Rabi	...	...	...	1,280	1,002	927
		Total	...	2,023	1,343	1,470

The area irrigated was below the average, and is accounted for by short supply in the river and favourable monsoon and rabi rainfall. The rainfall in November—

				Inches.
Jámda	...	...	...	0·90
Kolgaon	...	...	...	1·12
Bhadgaon Farm	...	...	...	1·16
Do. Katcheri	...	...	...	1·28

was beneficial to wheat and gram sowings and made these crops to some extent independent of the canal water.

5. The assessments amounted to—

				Rs.
Water-rates	...	...	...	3,167
Other sources	...	...	...	433
Total				3,600

6. The remissions during the year amounted to Rs. 38 from the kharif demands of the year and Rs. 2 from the rabi demands of the previous year : total Rs. 40. In the former case a sugarcane crop was lost in spite of the protection of a well, and in the latter case it was decided that the revenue due from crops in alluvial land above the Jámda bauhára was assessable by the Collector and creditable to land revenue.

7. The amount realizable during the year was :—

				Rs.
Water rates outstanding of previous demands	...	...	...	389
Rabi demands of 1889-90	...	...	...	2,740
Kharif, 1890-91	...	...	...	1,087
Other sources	...	...	...	433
Total				4,649

and the actual realizations amounted to Rs. 4,411, leaving an unrealized balance of Rs. 238.

8. Adding to the outstanding of former demands, as shown above, the rabi demands of the year sent for realization after the close of the year, the outstanding to be recovered are Rs. 2,318.

9. The water-rate assessment of the year is Rs. 2·5·9 per acre against Rs. 2·7·4 in the previous year. The falling off in the rate, though slight, is due to the less area of high-rated crops during the year.

10. The direct estimated capital cost of the project is :—

				Rs.
Works	...	...	...	8,18,047
Establishment	...	...	...	1,96,212
Tools and Plant	...	...	...	13,000
Total				10,27,259
Deduct—				
Capital Receipts	...	...	...	21
Net Total				10,27,238

The expenditure to end of the year 1890-91 amounts to:—

				Rs.
Works...	...	...	...	7,77,406
Establishment	...	...	...	1,88,380
Tools and Plant	...	...	...	12,729
			Total	9,78,515
<i>Deduct—</i>				
Capital Receipts	...	...	...	21
			Net Total	9,78,494

The year's expenditure has been:—

				Rs.
Works ...	...	...	...	1,323
Establishment	...	...	...	427
Tools and Plant	...	...	...	200
			Total	1,950

The details of the expenditure on works are:—

				Rs.
Plantations	...	...	...	925
Fixing boundary stones along canals	...	...	...	319
Survey for cross drainage works	...	...	...	79
			Total	1,323

The plantations require special mention here. The estimated cost of this item is Rs. 17,934 and the outlay to end of year is Rs. 12,879, leaving an unspent balance of Rs. 5,055 to be laid out hereafter. The history of the plantations is briefly this. The land along the canal banks and surrounding the canal buildings is generally well stocked with timber and fruit-trees. There are about—

11,500 bábuls,
460 mango trees,

and 1,300 trees of other description, such as nimb, tamarind, tiwas, moho, casuarina, bakam, sesum, &c. In addition to these, there are some 4,500 young mango plants and 350 moho plants and many others too young to be counted. No valuation has ever been made, but it is estimated that the bábul plantation alone must be worth quite Rs. 16,000. The mango fruits sold in the previous year yielded Rs. 26, and the revenue from them during the year was Rs. 32. This revenue is expected to increase to Rs. 500 in about five years' time. The gross value of the property can hardly be set at less than Rs. 25,000. Hitherto the outlay has been on hedging, watering and tending young plants and sowing new seeds. Experience shows that what has proved most successful has been the bábul, and next to this the mango plants are likely to prove remunerative. The attempts to get all sorts of other valuable trees to grow have been generally unsuccessful from one or other of the following causes, *viz.* precarious rainfall, unsuitability of the soil or climate, and the want of proper knowledge on the part of the establishment of mális available in the locality of the canals. A regular working plan for the future outlay was drawn up during the year. This embraces a scheme for the necessary maintenance of the present stock of timber and regular felling operations, the whole covering a period of 20 years.

11. The fixing of boundary stones was necessitated by a dispute with the land-owners caused by the operations of the revision survey.

12. The working expenses of the canals during the year are given below and compared with last year's expenses and average annual expenditure since the opening of the canals:—

	1890-91.	1889-90.	Average to end of 1889-90.
	Rs.	Rs.	Rs.
Extensions and Improvements ... ..	.....	.....	65
Repairs	4,555	5,301	5,900
Establishment	2,999	3,477	3,231
Tools and Plant	150	100	94
Profit and Loss ... ..	.....	.....	3
Refund of Revenue ... ..	.....	.....	14
Indirect Charges	420	487	583
Total P. W. Department	8,124	9,365	9,890
Collection Charges	194	346	200
Total	8,318	9,711	10,090

The year's charges are much below the average and less than what they were in the previous year. As stated in the last report, arrangements were made to reduce the establishment charges, and a small reduction under that head is apparent. In this year a change has been made in charging the establishment employed on management of irrigation to "Establishment" instead of "Works." This has reduced the charges against "Works" by Rs. 812.

13. The cost of measurement amounts to Rs. 90-15-0, or Re. 0-1-1 per acre.

14. The following is a comparison of the area for which water was asked and the area actually assessed :—

	Kharif.	Rabi.
	Acres.	Acres.
Applied for	329	1,014
Assessed	341	1,002
Difference	12	12

In the areas applied for in the kharif season the 60 acres for which applications were received after the submission of the irrigation operation statement are included. The increase in the kharif assessed areas and the decrease in the rabi areas are equal. This difference is slight and mainly due to inaccurate statements of areas in water applications.

15. The scale of water-rates during the year was the same as given in the previous year's report. Under that scale the year's assessment is shown in the following table in comparison with the assessment that would have been under the old scale of water-rate which was in force from 1883 to 1888 :—

Crops.	Area irrigated.	Assessment under existing rates.	Assessment under old scale.
	Acres.	Rs.	Rs.
I.—Perennial	54	832	545
II.—Eight months	45	176	135
III.—Four months and rabi	963	1,929	1,178
IV.—Monsoon dry	265	166	90
V.—Hot weather	16	64	64
	1,343	3,167	2,012

The assessment on areas irrigated, when verified by the scale of water-rates sanctioned, differs because the fractions of an acre in areas and of a rupee in the assessments are not taken into account, and also because of some of the monsoon dry-crops having been irrigated in the rabi season and assessed at the rabi rate.

Under the old scale the revenue would have been less by Rs. 1,193. The decrease in the area irrigated is not due to the enhancement of the rates but to deficient river supply and favourable monsoon and rabi rainfall, as has been explained already. The area irrigated during the year is 1,343 acres against the average of 1,134 acres irrigated prior to reduction of rates in 1883.

(16).—PARSUL TANK.

1. The tank has now been in operation for two years.

2. The works are complete except as regards the providing of distributaries, the project for which is under preparation. Water is being taken at present, through the existing channels, to the lands of Umrana and Soundana alone. Nāndgaon yet remains unsupplied.

3. At the close of the year the following scale of water-rates was sanctioned :—

	Rate per Acre.	
	Rs.	
Kharif crops	...	1
Rabi crops	...	4
Hot weather crops	...	6

This scale is to remain in force for a period of three years and to have effect from 15th January 1891. The assessments under the scale will, therefore, come into operation from the year 1891-92. No perennial irrigation is to be allowed, and the permanent bagayat area under the settlement which exists at Soundana is to have prior claim to the water available in the tank up to the end of February.

4. The tank had only 8·64 millions cubic feet of water against 118·70 millions cubic feet, its full capacity at the beginning of the year. It, however, filled on 7th November 1890.

5. The rainfall was 17·04 inches during the year against 13·32 inches of the previous year and 21·65 inches, the average of the past eight years. The monsoon rainfall from June to September compares thus with that of the previous year—:

Months.	1889.	1890.
	Inches.	Inches.
June... ..	0·27	3·71
July... ..	3·36	0·13
August	0·56	2·74
September	4·37	6·17
	8·56	12·75

The rabi rainfall of the year was 3·47 against 4·43 inches in 1889-90. The former, however, was spread all over the rabi season, whereas the latter was all in one month, viz. October.

6. The intensity of the year's rainfall with that of the previous year is compared thus :—

	1889.	1890.
Days on which 2 inches and upwards of rain fell	Nil.	1
Days on which 1 inch and upwards of rain fell	3	3
Greatest fall in 7 days in inches	3·43	5·74
Maximum daily intensity in inches	1·46	4·24
Total fall from June to October	12·99	15·08

With a such favourable rainfall there should be a decrease in the area irrigated both in the kharif and rabi seasons. Such has been the case in the kharif season but not in the rabi. The area irrigated during the year is shown below in comparison with the area of the previous year :—

		1889-90. Acres.	1890-91. Acres.
Kharif ...	...	190	179
Rabi ...	...	124	226
Total ...		314	405

In the kharif season applications for water for 291 acres were received and the crops would have been watered had not the abnormal fall of rain, 4.24 inches in one day on the 10th September, made the monsoon crops independent of canal water.

7. The increase in the rabi area, though apparently attributable to less rainfall, is properly due to the people's taking advantage of the water-supply available close by.

8. The crops grown in each season and watered by the two villages using the tank water are given below :—

	UMRANA.		SOUNDANA.		Total.
	Kharif.	Rabi.	Kharif.	Rabi.	
Bajri ...	34	...	121	...	155
Maize...	1	1	...	...	2
Chillies	1	1	...	...	2
Sesame	3	...	...	...	3
Fodder	6	...	...	...	6
Cotton	2	...	5	...	7
Softening ground...	1	...	4	...	5
Guava	...	...	1	1	2
Wheat	...	72	...	46	118
Gram ...	...	7	...	23	30
Onions	...	1	...	...	1
Methi	...	...	...	72	72
Jowari	...	...	...	2	2
Total ...	43	82	131	144	405

Water was granted to these areas except the 6 acres fodder on the same conditions as in the previous year, viz. that the irrigators would pay whatever rates might be fixed hereafter. The fodder crop was allowed water free of charge. If the rates now sanctioned by Government for three years from 15th January 1891 were made applicable to these crops as well as those grown in 1889-90, the amount realizable is :—

	1889.	1890.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Kharif ...	197 9 0	188 11 0	386 4 0
Rabi ...	548 4 0	924 15 0	1,473 3 0
Total ..	745 13 0	1,113 10 0	1,859 7 0

9. The year's assessments amount to—

		Rs. a. p.
Water rates ...	...	1,113 10 0.
Other sources ...	...	7 8 0.
Total ...	...	1,121 2 0.

and the realizations amount to Rs. 7-8-0 only on account of the revenue from other sources.

10. The water-rates remain to be realized pending the orders of Government as to whether the rates now sanctioned are to be made applicable or not to the previous irrigation.

11. According to the scale of the rates sanctioned the area irrigated is classified thus:—

			Acres.
I.—Kharif	...	...	170
II.—Rabi	...	...	227
III.—Hot weather	...	...	8
Total			405

Under I. are included the monsoon crops alone, which can be grown independently of canal waters in years of ordinary good rainfall. Under II. are included the ordinary rabi crops and valuable crops such as chillies, &c., which require more water and whose waterings extend short time beyond the kharif season. Under III. are included the fodder crop and the two acres of guavas which were allowed water prior to the receipt of the orders to disallow perennial cultivation.

12. The working expenses of the year amount to Rs. 160 on account of the establishment alone.

13. There has been no separate cost for measurements of crops, which were done by the establishment employed on the work.

14. The following is the calculated result of evaporation and absorption during the year:—

			Feet.
Kharif season	April to September, 69 days	...	3.41
Rabi	do. October to January, 85 days	...	1.68
Hot	do. February and March, 59 days	...	2.62
Total			7.71
Mean daily loss	...	...	361

From this result, as well as from the results obtained from other tanks in the district, a rule can be deduced to compute the maximum loss by evaporation and absorption in open reservoirs with earthen dams, viz., the evaporation and absorption in rabi season of 120 days varies from $\frac{1}{4}$ " to $\frac{1}{5}$ " and in hot season from January to middle of June 140 to 160 days it is as much as $\frac{3}{4}$ " per day, and the total loss varies from 8' to 12' in a year according to the nature of the substratum and the duration of the rainy season; but for practical purposes loss from evaporation and absorption may be reckoned at $\frac{1}{2}$ " per day over 240 to 280 days in a year of average rainfall.

(17).—PRAVARA RIVER WORKS—OJHAR CANAL.

The area irrigated during the year was 3,163 acres, of which 1,687 acres were kharif and 1,476 acres were rabi crops. The total shows a decrease of 1,398 acres as compared with the area irrigated in the previous year. The decrease is due to timely and favourable rainfall.

Comparison of area applied for and irrigated.

2. The following statement compares the area applied for and irrigated during the year:—

Year.	Kharif.		Rabi.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890-91.	1,838	1,687	2,149	1,476	3,987	3,163	151	673	824

The difference is due to timely and favourable rainfall in September and December 1890, which probably induced the cultivators not to resort to canal water previously applied for.

The area applied for but not irrigated is 26 per cent. of the area irrigated.

3. During the year under review the water-rate assessment amounted to Rs. 6,114, detailed as below :—

	Rs.
Kharif	3,086
Rabi	3,028

The total amount of the assessment in the last year was Rs. 8,937; there is, therefore, a decrease of Rs. 2,823, or 32 per cent.

4. The average incidence of water-rate per acre was Rs. 1.93 as compared with Rs. 1.96 in 1889-90. The decrease is due to the decrease in hot weather irrigation.

5. The capital expenditure during the year amounted to Rs. 1,208, and it was incurred in completing an overbridge with a regulator for Loni-Hasnapur road, unfinished at the end of the last year, and in constructing an overbridge for Loni-Satral road and two self-acting sluice gates as an experiment. The overbridge and two self-acting sluice gates were not completed.

6. The working expenses of the year amounted to Rs. 5,803 in all as follows :—

	Rs.
Maintenance and repairs	8,006
Share of establishment	2,112
Tools and plant	...
Share of collection charges	389
Indirect charges	296
Total	5,803

The working expenses of the last year amounted to Rs. 5,977. The rate for maintenance and repairs this year per mile of main canal open is Rs. 305 and per acre irrigated is Rs. 1.83.

7. The old water-rates were brought into force in 1889-90.

8. The cost of measuring 3,163 acres during the year was Rs. 437, or 2 annas and 3 pies per acre, against Rs. 418, or 1 anna and 6 pies per acre last year. The excess rate is due to the area of the fields irrigated being small and at a distance from each other.

9. The duty of water per cubic foot per second varied on the average from 5 to 59 acres in the hot weather, from 7 to 33 acres in the monsoon, and from 44 to 69 acres in the rabi season.

10. The rainfall during the year, as gauged at Ashvi, was 25.24 inches, or 0.41 inches less than the average during the last five years.

11. The river supply was abundant during the monsoon and early cold weather; it began to fail about the middle of December when an earthen dam, 2 feet high, had to be constructed as usual on top of the weir at Ojhar to increase the storage of water for the hot weather.

12. At the end of the year, the number of trees on this canal was Rs. 12,728. The number of principal kinds were :—

Plantations.

Bábul	9,459	Nimbhara	6
Mango	883	Nimb	1,608
Mango grafts	55	Bor	88
Jámbul	234	Bámbu	170
Bakan	30	Moho	7
Sandal	61	Kyene	8
Orange	35	Siris	16

The number of miscellaneous trees was 68. The total number last year was 11,987.

(18).—BHATODI TANK.

1. The area irrigated during the year was 1,251 acres, of which 804 acres were kharif and 447 acres were rabi crops. The total shows a decrease of 56 acres on the area of the last year. The decrease was due to timely rainfall in rabi season.

Comparison of area applied for and irrigated. 2. The following statement compares the area applied for and irrigated during the year :—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890-91.	766	804	454	447	1,220	1,251	38	7	31

The area irrigated exceeded that applied for. The excess is trifling, being only 2 per cent. of the area irrigated.

Water-rate assessment. 3. The water-rate assessment during the year amounted to Rs. 4,143, detailed as below :—

Kharif	Rs. 3,227
Rabi	916

The total amount of the assessment in the last year was Rs. 3,798 ; there is, therefore, an increase of Rs. 345, or 9 per cent.

4. The incidence of the water-rate per acre was Rs. 3.31 against 2.90 in the previous year, which is due to the increase in area of eight months' crops.

Water-rate per acre.

5. The capital account of this work is closed, but an expenditure of Rs. 278 has been incurred in certain additions to the inspection bungalow at Bhatodi.

Capital Account.

Working expenses. 6. The working expenses of the year amounted to Rs. 4,008, detailed as below :—

Maintenance and repairs	Rs. 2,229
Share of establishment	1,223
Tools and plant	73
Share of collection charges	312
Indirect charges	171
Total	4,008

The working expenses of the last year amounted to Rs. 2,776. There is, therefore, an increase of Rs. 1,232 on the whole. The increase in maintenance and repairs is Rs. 675 and is due to renewing the temporary earthen dam with stone pitching of waste weir, plantation and repairs to Bhatodi Tank road, &c. The rate for maintenance and repairs per mile of canal opened is Rs. 891 and per acre irrigated is Rs. 3.20.

- Water-rates. 7. The old water-rates were brought into force in 1889-90.
8. The duty of water per cubic foot per second varied on the average from 20 acres to 88 acres in the hot weather, from 75 acres to 258 acres in the monsoon, and from 85 acres to 219 acres in the rabi season.
- Duty of water.
9. The cost of measurement of 1,251 acres was Rs. 101, or 1 anna and 3 pies per acre irrigated against Rs. 32, or 3 annas per acre irrigated last year. Most of the area under the tank is sub-divided, and Rs. 32 was spent last year in measuring 171 acres only, which were not sub-divided.
- Cost of measurement.
10. The rainfall during the year, as gauged at Bhatodi, was 22·26 inches, or 5·83 inches less than the average during the last five years.
- Rainfall.
11. The water-supply of the tank was not abundant. On the 1st April 1890 the water stood at 14·96 feet above the sill of outlet sluice, *i.e.* at R. L. 84·96 against R. L. 81·52 on 1st April 1889. On the 3rd June it had fallen to R. L. 80·67, which was the lowest level of the year. The first replenishment took place on the 4th June and the tank gradually began to fill. The highest level of water during the year was 91·60 on the 5th October, which dwindled down to R. L. 82·54 on the 31st March, leaving the water 2·42 feet lower than at the commencement of the year. Observations of floods were not taken as water did not flow over the weir.
- Water-supply.
12. At the end of the year, the number of trees on the canal was 6,614. The number of principal kinds were :—
- Plantations.
- | | | | | | |
|------------|-----|-------|--------|-----|-------|
| Mango | ... | 1,383 | Jámhul | ... | 90 |
| Do. grafts | ... | 17 | Nimb | ... | 442 |
| Tamarind | ... | 44 | Sandal | ... | 87 |
| Bor | ... | 65 | Siris | ... | 84 |
| Khirmi | ... | 9 | Bábul | ... | 4,151 |
| Rithe | ... | 1 | Sindi | ... | 2 |
| Orange | ... | 19 | | | |

The number of miscellaneous trees was 220. The total number last year was 6,613.

(19).—MÁTOBA TANK.

1. The water in the Mátoba Tank, which is filled by the surplus water from the Mutha Canal, stood at the opening of the year, 1st April 1890, at 19·00 feet above the sill of the outlet. The water level then fell continuously until 29th July, when it was at the lowest level for the year, or 7·70 feet above the sill. From this date the water began to rise and the tank filled on the 13th October, and the maximum level was reached on 8th December, when the water stood at 29·25 feet above the sill of the sluice. At the close of the year it fell to 23·50 feet, or 4·41 feet higher than the level of the previous year.

2. The area irrigated from this tank during the year was 1,879 acres, of which 1,166 were kharif and 713 rabi. The total shows a decrease of 298 acres as compared with the previous year, or 14 per cent., which is due to a decrease of 370 acres in rabi due to favourable rainfall in October, November and December, there having been an increase of 72 acres in kharif. There was a decrease in the total assessment of water-rates, which amounted to Rs. 7,914, as compared with Rs. 9,145 in the previous year. The incidence of the water-rates was Rs. 4·21 per acre irrigated against Rs. 4·20 in the previous year. The miscellaneous revenue amounted to Rs. 101, making a total revenue of Rs. 8,015.

3. The areas irrigated were ascertained by actual measurements, most of which were taken by measurers specially entertained for the purpose, and the remainder by an inspector in

Crop measurements.

the intervals of his regular work. The total cost of measurements was Rs. 84, or 8 pies per acre, as compared with 4 pies in the previous year, due to ordinary canal establishment not having been available for this work to the same extent as in the previous year.

4. The working expenses amounted to Rs. 2,345, which represents a rate per mile of canal in operation of Rs. 137·94, or Rs. 1·25 per acre irrigated.

5. The highest duty of water during the months in which no rain fell was obtained in January when the average area irrigated was 1,003 acres and the average discharge 9·16 cubic feet per second, giving a duty of 109·49 acres per cubic foot per second. The lowest duty in the dry season was in June when the area irrigated was 396 acres and the average discharge 6·53 cubic feet per second, giving a duty of 60·64 acres per cubic foot per second. No useful information of the kind can be obtained for the rainy season, the canals being single-banked.

6. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
1,054	1,204	2,258	1,166	713	1,879	112	...	...	491

The less quantity irrigated in rabi is due to favourable rainfall having fallen after the applications were sent in.

7. The number of trees on this tank was 15,141, the principal trees being bábul, 14,915 in number.

8. The following gives the loss by evaporation and leakage during the year:—Gaugings were taken from April 1890 to end of March 1891, or a total number of days 242; during this period the loss amounted to 62,756,937 cubic feet, or $\frac{1}{4}$ th nearly of the total capacity of the tank above outlet level.

(20).—KÁSURDI TANK.

1. This tank was empty on 1st April and remained so till 5th June, when it was replenished, after which it again gradually fell to the level of the sill and remained empty till 9th September, when it was again replenished to a level of 224·10, or 16·60 above the sill of outlet. The storage was drawn upon from the 9th October and the water level fell to R.L. 212·75 on 1st February 1891.

2. The areas irrigated were 26 acres of kharif and 117 acres of rabi crops; the total shows a decrease of 102 acres as compared with the previous year (or 42 per cent). The decrease is due to a much smaller replenishment in the tank than last year.

During the hot season, when there was no water in the tank, the bed of the tank was utilized for the cultivation of melons, and Rs. 125 were obtained as rent.

3. The assessment amounted to Rs. 451, of which Rs. 308 were on account of water-rates and Rs. 143 for miscellaneous revenue. This shows a decrease of Rs. 184 on the total assessment of the previous year.

4. The areas irrigated were ascertained by actual measurements by measurers specially entertained for the purpose and from 9 to 12 per cent. were checked by the subordinate in charge. The cost of the measurements amounted to Rs. 5, or at the rate of 7 pies per acre.

5. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.			Acres.	Acres.
33	135	168	26	117	143	...	...	7	18

6. There were 1,066 trees on this tank, of which 1,054 were bābul.

(21).—SHIRSUPHAL TANK.

1. At the commencement of the year the water in the Shirsuphal Tank stood at 25·23 feet above the sill of the outlet sluice, that is, 7·23 feet higher than at the corresponding period of the previous year. The tank received its first replenishment on 8th September, and then gradually filled to a level of 90·70, or 30·70 above the sill of outlet on the 8th December 1890.

The maximum height above the sill of outlet was 30·70 on the 8th December. At the close of the year the water level was 26·95 above outlet sill, or 1·65 feet higher than on the corresponding date of the previous year.

2. The areas irrigated were 572 acres of kharif and 433 acres of rabi crops, or a total of 1,005 against 1,302 acres in the previous year. The decrease is due chiefly to decrease in rabi on account of favourable rainfall in October, November and December. The slight falling off in kharif is also due to favourable rain.

3. The assessment amounted to Rs. 2,779, of which Rs. 2,712 were on account of water-rates and Rs. 67 for miscellaneous revenue. This shows a decrease of Rs. 708 on the total assessment of the previous year. The average incidence per acre for the year was Rs. 2·70 against Rs. 2·45 in the previous year.

4. The areas irrigated were measured by measurers specially entertained for the purpose and partly by an Inspector when time could be spared from his ordinary work; the cost was Rs. 57, or 11 pies per acre against 5 pies in the previous year. The increase is due to the transfer of the Inspector.

5. The working expenses amounted to Rs. 1,814, which represents a rate for maintenance per mile of canal in operation of Rs. 145 and Rs. 1·80 per acre irrigated.

6. The highest duty of water in the month during which no rain fell was obtained in July, when the area irrigated was 615 acres and the average discharge 5·83 cubic feet per second, giving a duty of 105·49 acres per cubic foot per second. The lowest duty in the dry season was in May when the area irrigated was 188 acres and the average discharge 4·32 cubic feet per second, giving a duty of 43·52 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for the rainy season, the canals being single-banked.

7. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.			Acres.	Acres.
587	544	1,131	572	433	1,005	...	...	15	111

Less quantity is almost entirely due to favourable rainfall falling in the rabi season after the applications had been sent in.

8. The number of trees on this tank was 10,016, of which 8,640 were bábul and the rest miscellaneous trees.

9. The following gives the loss by evaporation and leakage during the year. Gaugings were taken during the months of April, May, June, July, August and September 1890 and January, February and March 1891, or a total number of days 215; during this period the loss amounted to 131,573,723 cubic feet, or one-third nearly of the total capacity of the tank above outlet level.

(22).—BHÁDALVÁDI TANK.

1. At the commencement of the year the water in the tank stood at 26·74 feet above the outlet sluice, that is, 0·40 feet lower than at the corresponding period of the previous year. There were good replenishments in the middle of June, first week in August, and again on the 9th September. On the latter date the water level was 20·60 feet above the outlet sluice and it continued to rise until it reached its maximum for the year on the 9th November 1890, when it was 31·65 feet above the sill of the outlet, it then gradually fell and at the close of the year was 25·25 feet, or 1·54 lower than on the corresponding date of the previous year.

2. The areas irrigated were 437 acres of kharif and 206 acres of rabi, making a total of 643 acres against 985 acres in the previous year. The greater part of this decrease was due to favourable rain in the rabi season and to a small extent in the kharif season also, there having been an increase last year due to want of seasonable rain. The assessment of water-rates amounted to Rs. 3,009 and the miscellaneous revenue to Rs. 106, making a total of Rs. 3,115 against Rs. 3,961 in the previous year.

3. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an inspector when time could be spared from his ordinary work. The total cost of measurements was Rs. 31, or 9 pies per acre.

4. The working expenses amounted to Rs. 1,767, which represents a rate per acre irrigated of Rs. 2·75. This rate, though still somewhat high, is due to the smaller area being irrigated as explained in paragraph 2 *ante*.

5. The highest duty of water obtained during the year was in the month of September, when the area irrigated was 528 acres and the average discharge was 3·33 cubic feet per second, giving a duty of 158·56 acres per cubic foot per second. The lowest duty in the year was in May, when the area was 302 acres and the average discharge 5·30 cubic feet per second, giving a duty of 56·98 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

6. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
413	336	749	437	206	643	24	...	...	130

7. The number of trees on this tank was 8,018, of which 6,841 were bábul and 777 bámbu.

8. The following gives the loss by evaporation and leakage during the year:—Gaugings were taken from 1st April to 5th December 1890, and in January, February and March 1891, or a total number of days 291; during this period the

loss amounted to 84,246,679 cubic feet, or $\frac{1}{3}$ rd nearly of the total capacity of the tank above outlet level.

(23).—KOREGAON TANK.

1. The rainfall gauged at Koregaon during the year was 31·26 against 36·80 of the previous year. The tank did not fill this year and in the first week of November the water surface was at R. L. 87·81 against 96·00 on that date of the previous year; but the heavy shower in the 2nd week of November raised the surface to 91·50, and this was further replenished by the rainfall in December, so that the highest level the water surface reached this year was only 91·75 against 97·50 of the last year. This quantity of water, it is hoped, will be sparingly sufficient for the irrigation under the tank.

2. The total area irrigated is 220 acres against 336 in the previous year—

	Kharif.	Rabi.	Total.
1889-90	13	323	336
1890-91	121	99	220

showing an increase of 108 acres in kharif and a fall of 224 in rabi, and a total decrease for the year of 116 acres. The rise in the former is due to sufficient water in the tank at the commencement of the season and the decrease in latter was mainly in jowāri crops and was due to seasonable rainfall in November.

3. On this tank there was no difference between the area applied for and that actually irrigated during the year :—

	Kharif.	Rabi.	Total.
Area applied for	116	103	219
Do. actually irrigated	121	99	220

4. The total assessment from all sources amounted to Rs. 599 during the year : of the above, Rs. 9 were received from land let out for grazing purposes and rest from water-rates representing Rs. 2·68 per acre irrigated. This is fair, as the general water-rate for crops of all kinds, except the perennial, is Rs. 2 on this tank.

5. The net revenue derived during the year is Rs. 1,087, of which Rs. 1,078 are for water-rates alone. This shows the great willingness of the people to avail themselves of the water when there is sufficient for perennial crop; and when this falls short, the people take it for 8 months' and 4 months' crops if necessary; hence the fall and rise in revenue under this tank.

6. The working expenses, including indirect charges, amounted to Rs. 773, which give Rs. 351 per acre irrigated. The maintenance charges were Rs. 427 for $3\frac{1}{2}$ miles of the canal. This cannot be reduced any further as the canal is silted by every fall of rain and consequently requires to be attended to during the monsoon.

7. The area irrigated was measured by the canal kárkún and khalási under him and checked by the subordinate in charge. The cost on this account is Rs. 60, giving Re. 0·4·4 per acre irrigated.

8. There was no receipt from plantation during the year. The trees above and below 5 feet were 905 and 600 respectively.

9. Gauge observations were taken on this tank for determining the duty of water, and the result obtained is given below :—

Perennial.		
Turmeric.	Sugarcane.	Average.
Acres.	Acres.	Acres.
67	60	63·50

10. The following gives the storage lost in evaporation and absorption during the year :—

Quantity in tank for use during the year	95,703,212
Deduct quantity discharged through the channel	37,825,056
Quantity of water in tank on 31st March 1891	44,958,040
	82,778,096
Quantity lost by evaporation	12,925,116
Average depth of water in tank	2·0761

(24).—ASHTI TANK.

1. The rainfall gauged during the year was 27·73 against 30·42 of the last year. The tank did not fill this year and the highest level of the water surface in the tank reached was 1,545·70, *viz.* about 0·50 below the bed of the cut in waste-weir channel.

2. The area irrigated during the year was 1,124 acres against 1,447 of the last year: of these, 576 acres were kharif and 548 were rabi, so that there was a decrease of 253 acres in kharif and 70 acres in rabi. The decrease in kharif was mainly in perennial and eight months' crops, especially due to want of manure in the villages on the canals, and the decrease in rabi was in jowári and due to favourable rainfall towards the close of the monsoon.

3. There was practically no difference between the area applied for and that actually irrigated during the year :—

				Kharif, Acres	Rabi, Acres.	Total. Acres.
Area applied for	...	...	...	567	548	1,115
Do. irrigated	...	...	...	576	548	1,124

4. The net revenue from all sources amounted to Rs. 4,916 against Rs. 5,456 of the previous year. The chief deficit is under water-rates, owing to there being a fall in rabi irrigation in the year.

5. The gross assessments from all sources were Rs. 4,294, of which Rs. 894 were recovered from sale of bábul trees behind the dam, and of aloe leaves, bábul branches, &c.

6. During the year the bábul trees behind the dam, numbering about 6,000, have been put to auction and sold; and the result was as anticipated. The amount offered is much less than what is got at Sholápur owing to the wood having had to be carted to a market place at great cost. The trees along the canals and contour are all in a promising state. The trees on the canals were trimmed by the establishment, as usual, and the loppings sold to cultivators for fencing. The expenditure on plantation was Rs. 285. The number of large trees of all kind was 17,612, and of those below 5 feet was 24,928. There are also a number of smaller trees not included in the above figures.

7. The working expenses of the year, including all direct and indirect charges, were Rs. 4,999. The collection charges were Rs. 152; the maintenance charges were Rs. 3,000, or Rs. 109 per mile of canal; and this is found necessary to keep the canals in good working order. Weeds grow considerably in these canals as the velocity is much too small to check their growth.

8. The land under command of this tank is sub-divided into small suitable irrigation numbers, and, therefore, no annual charge is incurred in measuring irrigation, but the subordinate in charge prepares the assessment sheets by merely inspecting the irrigated numbers.

9. Gauge observations made during the year for determining the duty of a cubic foot of water per second give the following results :—

<i>Perennial Crops.</i>		
Sugarcane. Acres. 91	Plantation. Acres. 77	Average. Acres. 84
<i>Eight-monthly.</i>		
Ground-nut. Acres. 181	Chilly. Acres. 192	Average. Acres. 186
<i>Four-monthly.</i>		
Inferior Rice. 149	Jod Wheat. 135	Average. 142

Two rain gauges have been maintained to register the rainfall on the gathering ground of this tank, which is 92 square miles, and the mean of the two gauges taken to find out the rainfall and run-off from June to October. The average rainfall is 16·44 inches against 29·89 of the previous year during that period; and this is equivalent to 3,514 millions of cubic feet of water on the catchment area of the tank.

10. The run-off has been calculated to be '086 of the total average rainfall. The following shows the storage lost in evaporation and absorption during the year:—

Total quantity of water in tank—	
For use during the year	1,092,883,560
Deduct quantity of water in tank discharged through the canals or leakage	180,706,464
Actual quantity in tank on 31st March 1891	749,083,560
	929,745,024

Therefore quantity lost by evaporation and absorption, &c., during the year =163,138,536, or 2·91 depth of water in tank on mean area.

(25).—REVA'RI CANAL.

1. The extension works of this canal, mentioned in last year's report, were completed during the year at a total capital expenditure of Rs. 1,523.

2. The rainfall during the year was 29·72 inches against 40·06 inches the year before, the average for the previous ten years being 33·80 inches.

3. The area irrigated, compared with that for 1889-90, was—

		Khariff.	Rabi.	Total.
		Acres.	Acres.	Acres.
1889-90...	...	192	1,033	1,225
1890-91...	...	205	822	1,027

showing an increase of 13 acres in khariff and a decrease of 211 acres in rabi. The decrease in rabi area is chiefly due to seasonable rainfall.

The area irrigated was 28 per cent. of that under command and 4 per cent. in excess of that applied for.

4. The assessments, excluding remissions, were as below :—

		Khariff.	Rabi.	Total.
		Rs.	Rs.	Rs.
1889-90...	...	1,390	8,267	4,657
1890-91...	...	2,172	2,826	4,998

Remissions had to be given to the extent of Rs. 26 for rabi. This item is of a permanent character—*vide* Government Resolution, Revenue Department, No. 3610, dated 23rd August 1865. Though the area irrigated has decreased by 16 per cent., the assessments have increased by over 7 per cent., which increase is entirely due to the enhanced rates introduced during the year. Revenue from other sources amounted to Rs. 36, bringing the total gross revenue to Rs. 5,034.

5. The average water-rate was Rs. 4·8 per acre against Rs. 3·8 of the previous year.

6. The cost of measurement was Rs. 191, equal to two annas 11 pies per acre measured, as against 2 annas 8 pies per acre of the previous year.

7. The working expenses of the year, including direct and indirect charges, amounted to Rs. 1,938 as compared with Rs. 2,476 in 1889-90. This shows a decrease of nearly 22 per cent. on the expenses of the year before, and is 38½ per cent. on the gross revenue. The rate per mile of canal open was Rs. 388 against Rs. 495 of the preceding year. The rate per acre irrigated was 1·89 for this year as compared with Rs. 2·02 for 1889-90.

8. The maximum duty of water obtained on this canal was 300 acres per cubic foot per second in January 1891 and the minimum 24 acres in October 1890.

(26).—UPPER MA'N RIVER WORKS.

1. The expenditure for the year against the capital account of these works amounted in all to Rs. 1,355, out of which, besides paying land compensation to the amount of Rs. 970, some minor works were provided.

2. The rainfall of the year, as gauged at Gondwli, was 20·20 inches against 27·04 inches for the year 1889-90, the average of the previous ten years being 21·57.

3. The areas irrigated were 954 acres of kharif and 416 acres of rabi, making a total of 1,370 acres against 1,431 acres of the previous year. This shows a decrease of 61 acres on the whole, or $4\frac{1}{2}$ per cent. nearly, while the decrease of 272 acres in rabi alone is due to seasonable rainfall.

The proportion of the area irrigated was 23 per cent. of the whole irrigable area under command; and the irrigated area, as actually measured, was 2 per cent. in excess of that for which applications were received.

4. The water-rate assessments amounted during the year to Rs. 5,856, detailed as below :—

		Kharif. Rs.	Rabi. Rs.	Total, Rs.
1889-90 ..	...	3,945	2,470	6,415
1890-91...	...	4,609	1,247	5,856

There were no remissions granted during the year. Revenue realized from other sources was Rs. 76, and the gross revenue was Rs. 5,932.

5. The incidence of water-rate per acre was Rs. 4·2 against 4·5 per acre of the preceding year.

6. The cost of measurement was Rs. 123, being at the rate of 1 anna 5 pies per acre measured.

7. The working expenses including all charges, amounted to Rs. 4,723, equal to a cost of Rs. 197 per mile of canal open and Rs. 3·45 per acre irrigated. As compared with the previous year, they show an increase of 31 per cent. and are 80 per cent. of the gross revenue.

8. The maximum duty per cubic foot per second of discharge was 75 acres in December 1890 and minimum 10 acres in March 1891.

(27).—YERLA CANALS.

1. During the year under report, only a few works of minor importance were carried out at a total expenditure of Rs. 495 against the capital account.

2. The rainfall of the year, as compared with that for 1889-90, was as follows :—

					Inches.
1889-90	...	...	...	...	40·51
1890-91	...	...	...	...	27·70

The average for the ten previous years was 32·64.

3. The areas irrigated were 895 acres of kharif and 919 acres of rabi, or a total of 1,814 acres, showing an increase of 121 acres in kharif and a fall of 231 acres in rabi, or a net decrease of 110 acres over the previous year. The percentage of the area irrigated to that under command was 17; and the irrigated area actually measured was 7 per cent. in excess of that applied for.

4. The total assessments during the year amounted to Rs. 8,478, detailed as below :—

					Rs.
Kharif	...	...	...	...	5,171
Rabi ...	...	...	...	...	3,307
Total	...	...	...	...	8,478

Remissions to the extent of Rs. 6 were granted for rabi. This item of remission is of a permanent character, the free grant of water to an Inámdár of Khatáv having been sanctioned in Government Resolution No. 107 W. I.—327, dated 22nd August 1877. The total amount of the assessment in the previous

year was Rs. 8,227, showing an increase in the year under report of Rs. 251, or 3 per cent., which is due to the rates being enhanced during the year. Revenue realized from other sources amounted to Rs. 614, bringing the total gross revenue to Rs. 9,092.

5. The average water-rate for the year was Rs. 4·6 per acre against Rs. 4·3 per acre in the previous year.

6. The cost of measurement of crops amounted to Rs. 276, equal to 2 annas 5 pies per acre measured.

7. The working expenses of this system of canals, including all charges, direct and indirect, amounted during the year under report to Rs. 6,137, which represents a cost of Rs. 191·8 per mile of canal open, or of Rs. 3·38 per acre of land irrigated. As compared with 1889-90 the working expenses of the year show a slight increase of $3\frac{3}{4}$ per cent. and are 67 per cent. of the gross revenue.

8. The maximum duty of water performed on these canals during the year was 78 acres per cubic foot per second in November 1890, and the minimum 16 acres per cubic foot per second in March 1891.

(28).—CHIKHLI CANAL.

1. There was no expenditure incurred during the year against the capital account of this canal.

2. The rainfall of the year was 27·06 inches, that of the previous year 37·07 inches. The average of the ten preceding years was 28·08 inches.

3. The area irrigated during the year was as follows :—

				Kharif. Acres.	Rabi. Acres.	Total. Acres.
1890-91	...	...	...	322	85	407

which, as compared with 413 acres for the year 1889-90, shows a slight decrease of 6 acres only, or about $1\frac{1}{2}$ per cent. The percentage of the area irrigated to the total irrigable area under command was 28, while the area as actually measured was 7 per cent. less than that for which applications were received.

4. The total water-rate assessments for the year amounted to Rs. 1,844, viz. Rs. 1,485 for kharif and Rs. 359 for rabi, which, as compared with the previous year, shows an increase of Rs. 312, or 20 per cent.

No remissions were granted. The gross revenue from all sources amounted to Rs. 1,978.

5. The working expenses, including all direct and indirect charges, amounted during the year under report to Rs. 782, which compares with the two preceding years as follows :—

Year.						Rs.
1888-89	...	...	...	...	...	975
1889-90	...	...	...	...	...	1,602
1890-91	...	...	...	...	...	782

This shows a decrease of over 50 per cent. from the year before and is 40 per cent. of the gross revenue, thus representing a cost of Rs. 120 per mile of canal maintained, and Rs. 1·92 per acre of land irrigated.

6. The incidence of water-rate was Rs. 4·5 against Rs. 3·7 of the year before.

7. The cost of measurement amounted in all to Rs. 35, representing a rate of 1 anna 5 pies per acre measured.

8. The maximum duty of water was 96 acres per cubic foot per second of discharge in July 1890 and the minimum duty performed on this canal was 14 acres in April of the same year.

(29).—MAINI TANK CANAL.

1. During the year under report the works of improving the waste weir-channel and of extending and restoring the head-works of the canal, as described

in last year's report, were completed at a total expenditure of Rs. 22,283, which have to be apportioned between the Revenue and Capital Accounts according to the nature of the works. Later in the year an additional flood channel, to be provided to the Maini Tank at the south end of the existing waste weir, was sanctioned at an estimated cost of Rs. 9,816, chargeable to Capital Account. The work was commenced and an expenditure of Rs. 433 incurred before the close of the year.

2. The rainfall of the year, as gauged at Maini, was 22·55 inches, as compared with 41·43 inches of the preceding year, 25·47 inches being the average of the ten previous years.

3. The area irrigated was 1,308 acres of kharif and 418 acres of rabi, making a total of 1,726 acres, which, as compared with the previous year, shows, a decrease of 49 acres in all.

The area irrigated was 37 per cent. of the total irrigable area under command, and was practically the same as that for which applications were received.

4. The total water-rate assessments of the year amounted to Rs. 7,835, being Rs. 6,212 for kharif and Rs. 1,623 for rabi, which, as compared with the year before, shows an increase of Rs. 317, or more than 4 per cent.

The revenue from other sources realized Rs. 184, bringing the gross revenue up to Rs. 8,019.

5. The working expenses of the year, including all charges, amounted to Rs. 5,417, being at the rate of Rs. 338 per mile of canal maintained, and Rs. 3·14 per acre irrigated. As compared with the year before, these charges show an increase of Rs. 527, or nearly 11 per cent. and of 52 per cent. over the year 1888-89, being principally due to executing special repairs and providing out-houses to the inspection chauki at Maini, and also to the extensive silt clearance caused by the heavy floods of 1889 being completed during the year.

The expenses of the year were 68 per cent. of the gross revenue.

6. The average water-rate was Rs. 4·5 as compared with Rs. 4·2 of the year before.

7. The cost of measurement was Rs. 238, being at the rate of two annas two pies per acre irrigated.

8. The maximum duty of water was 160 acres per cubic foot per second of discharge in September 1890 and minimum 33 acres in February 1891.

(30).—MUCHKUNDI TANK.

1. The rainfall gauged at the tank, as compared with that for 1889-90, was as follows :—

					Inches.
1889-90	...	...	...	...	21·73
1890-91	...	...	...	...	20·80

2. The area irrigated and assessments were :—

Year.				Acres.	Assessment.
For 1889-90	...	...	...	2	19
„ 1890-91	...	...	...	11	64

The increase consists of 8 acres of kharif area and 1 acre of rabi, for which latter, application was received for the first time.

3. The gross assessed revenue from all sources amounted to Rs. 81, the expenditure for maintenance having been Rs. 343. It is possible this tank, which has been specially reported on, may just pay for its maintenance charges and thus be worth keeping up, but it cannot be expected, it is to be feared, to do much more.

(32).—GADIKERI TANK.

1. The management of this tank is under the control of the Revenue Department.

2. There was no expenditure on the tank during the year.

3. The area irrigated by the tank was 337 acres. The consolidated revenue amounted to Rs. 2,658, of which Rs. 2,127 was irrigation share and Rs. 531, land share. There was a loss of Rs. 140 to the work during the year, for irrigating Inám lands, so that the net revenue was only Rs. 1,987.

(33).—DÁMBAL TANK.

1. The rainfall compared with that of 1889-90 was as follows :—

					Inches.
1889-90	...	...	...	...	21·37
1890-91	...	...	...	...	22·97

The average for 11 years previous being 20·21.

2. The tank did not fill, the highest water-level reached (in June) was $2\frac{1}{2}$ below F. S. L.; at the end of March it was quite dry.

3. The "new" area irrigated was as follows :—

				Kharif. Acres.	Rabi. Acres.	Total. Acres.
1889-90	...	...	...	83	69	152
1890-91	...	...	...	177	36	213

The area irrigated was only 4·7 per cent. of that which is irrigable, and is 28 per cent. more than that of the previous year, which is owing to unfavourable rainfall having led to the irrigation of a large area of "Jowari".

The area irrigated and that applied for was nearly the same.

4. The assessments, excluding remissions of the year, were as below :—

				Kharif. Rs.	Rabi. Rs.	Total. Rs.
1889-90	...	...	...	529	337	606
(Remissions Rs. 260.)						
1890-91	...	...	...	497	139	636

This is an increase of 4 per cent. No remissions were granted during the year. Miscellaneous revenue realized Rs. 359, while the increased assessment levied on the "old" irrigation and due to the improved supply was Rs. 666, making a total gross revenue of Rs. 1,661 as compared with Rs. 1,795 the year before.

5. The average water rate was Rs. 2·99 per acre as against Rs. 5·7 the year before.

6. The working expenses, including all charges, were as follows :—

					Rs.
1889-90	...	...	...	...	553
1890-91	...	...	...	...	717

which is an increase of 23 per cent. and is 43 per cent. on the gross revenue.

7. The average duty of the channels in the kharif and rabi seasons, taking the "old" area into consideration, was 143 and 71 acres per cubic foot per second respectively.

(34).—MEDLERI TANK.

1. The rainfall compared with 1889-90 was as follows :—

					Inches.
1889-90	...	...	...	...	28·72
1890-91	...	...	...	...	27·81

the average for the thirteen past years being 23·08.

2. The tank, which was partly replenished at the end of May, filled to overflowing ($1\frac{1}{2}$ feet deep over waste weir crest) in the beginning of November. At the end of March there was still $9\frac{1}{2}$ feet of water available for irrigation.

3. The area irrigated was as follows :—

				Kharif. Acres.	Rabi. Acres.	Total Acres.
1889-90	...			95	9	104
1890-91	...			59	16	75

This is 7 per cent. of the irrigable area and is about 38 per cent. less than the previous year. The area irrigated and that applied for was practically the same.

4. The assessments were as below :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1889-90 ...	426	31	457
1890-91 ...	262	84	346

which shows a decrease of 32 per cent. No remissions had to be given.

5. The average water-rate was Rs. 4·61 per acre as compared with Rs. 4·4 the year before.

6. The working expenses, including all charges, were :—

	Rs.
1889-90 ...	988
1890-91 ...	618

which shows a decrease of nearly 60 per cent. and is 179 per cent. on the gross revenue.

7. The duty per cubic foot per second was for kharif 45 acres and for rabi 23 acres.

(35).—MADAG TANK CANALS.

1. The rainfall was 34·45 inches against 33·82 inches last year, the average for the last 21 years being 30·29 inches.

2. The area irrigated was as follows :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1889-90 ...	390	261	651
1890-91 ...	573	369	942

and is 54·4 per cent. of the irrigable area, the increase in irrigated area being nearly 31 per cent. over that of the previous year, which is due to the natural development of irrigation.

3. The assessments were :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1889-90 ...	1,126	753	1,879
1890-91 ...	1,334	1,284	2,618

No remissions had to be granted. An additional sum of Rs. 122 was realized for grass, &c., the total gross revenue amounting to Rs. 2,740.

4. The average water-rate was Rs. 2·78 per acre against nearly Rs. 3 per acre that of the previous year.

5. The working expenses, including all charges, were :—

	Rs.
1889-90 ...	1,997
1890-91 ...	1,095

The decrease is 32 per cent. on that of last year and is 40 per cent. of the gross revenue. This sum may be considered the minimum amount that is indispensably necessary for the maintenance of the canals.

6. The principal crop acreages were :—

Rice 296, vegetables 66, sugarcane 24, onions 19, and garlic and turmeric 516.

7. The total number of trees on the canals over 6 feet high is 3,231, and consist chiefly of bābul, mango, sandal, nimb and tamarind.

8. The measured loss by leakage and evaporation was 1·02 and ·67 cubic feet per mile on the Right and Left Bank Canals, respectively. The duty per cubic foot per second was 83 and 37 acres for the kharif and rabi, respectively.

48 (36).—ASUNDI TANK; (37).—MÁVINKOP TANK; (39).—GOKÁK CANAL,
1ST SECTION, AND STORAGE WORKS. ,

(36).—ASUNDI TANK.

1. The rainfall gauged at Ráneennur, 6 miles away from the tank, was:—

				Inches.
1889-90...	...	...	...	28·76
1890-91...	...	...	...	34·70

the average for 23 years being 23·50 inches.

2. The minimum tank level up to November was 8 feet above the outlet sill. Early in November, the waste weir overflowed $1\frac{1}{2}$ feet deep. At the end of March 1891, there was $10\frac{1}{4}$ feet depth of water available for irrigation.

3. Exclusive of "old" irrigation, the areas irrigated were:—

		Kharif. Acres.	Rabi. Acres.	Total. Acres.
1889-90 ...	...	49	26	75
1890-91 ...	...	58	27	85

This is 4 per cent. of the irrigable area. The increase in area irrigated is about 11 per cent. and is due to the smallness of last year's area.

4. The assessments were:—

		Kharif. Rs.	Rabi. Rs.	Total. Rs.
1889-90 ...	...	167	64	231
1890-91 ...	...	263	77	340

The increase is 32 per cent. No remissions had to be granted. A sum of Rs. 472 was realized from consolidated rates on "old" irrigation, making the gross revenue Rs. 812 as compared with Rs. 703 the year previous.

5. The average water-rate was Rs. 4·00 per acre against Rs. 3·1 per acre in 1889-90.

6. The working expenses, including all charges, were:—

				Rs.
1889-90 ...	...	...	...	685
1890-91 ...	...	...	...	707

This is an increase of 3 per cent. on the expenses of the year before, and is 87 per cent. on the gross revenue.

7. The average duty of water, including the old irrigated area in the kharif season, was 35 acres and in the rabi 19 acres.

8. The result of the enquiry (noted in last year's report) by the Agricultural Department, called for in Government Resolution No. 39 A. I.—535 of 14th March 1890, has not as yet been communicated.

(37).—MÁVINKOP TANK.

The enhancement of the water-rates, due to the improvements carried out on this tank in the famine, still remains in abeyance in deference to the opinions of the Revenue authorities; consequently no return is obtained on the expenditure incurred. The tank is managed by the cultivators under the control of the Revenue Department.

(39).—GOKÁK CANAL, 1ST SECTION, AND STORAGE WORKS.

1. During the year 1890-91, the weir at Dhupdal for the Gokák Storage Works was completed. The expenditure up to date has been Rs. 4,65,507 against the estimate of Rs. 5,45,587; but some excess is anticipated in consequence of unexpectedly high rate demanded for land compensation, and some additional work experience has shown to be required.

This fine weir has an overfall of 3,000 feet and provides for a flood of 7 feet over the crest, equivalent to a discharge of about 200,000 cubic feet per second. The crest of the weir is about 25 feet above the bed of the river, and the maximum height of the weir crest above foundations is 28 feet. The storage is 701½ million cubic feet.

2. Previous to the construction of this weir a masonry dam, about 12 feet in height, providing storage of about 400 million cubic feet only, constituted, with the canal as it now is, the Gokák Canal irrigation scheme. The water thus impounded sufficed to meet the then requirements of the Gokák Mills, but only a small quantity of it was available for irrigation purposes. The hot weather irrigation was in consequence precarious and of small extent. The increased demand for water for the Gokák Mills necessitated the construction of the new weir, which provides a storage of 2,026 million cubic feet, sufficient for the demand from the mills and for an extension of hot weather irrigation.

3. The supply of water to the mills was increased from 17 to 27 cubic feet per second this season on the 14th January 1891.

4. The weir was completed sufficiently to commence storing water during January 1891 and the under-sluices were closed on the 2nd January 1891.

5. The kharif and hot weather irrigation depended, as in previous years, upon the limited supply the old dam afforded, but for rabi the new storage was available and hence water applications were sanctioned for the whole year.

6. The rainfall gauged at the head of the canal compares with the previous year as follows:—

				Inches.
1889-90 ...	...	...	...	27·38
1890-91 ...	...	...	...	24·11

7. The area irrigated was:—

		Kharif.	Rabi.	Total.
1889-90 ...	...	2,993	1,185	4,178
1890-91 ...	...	2,562	1,286	3,848

The area for 1890-91 closely agrees with that for 1888-89, which was 3,837 acres. The small decrease from the previous year is probably due to favourable rain in July and August.

The area irrigated was 23·09 per cent. of the whole irrigable area under command, a very high percentage, and agrees closely with the area for which applications for water were made.

8. In spite of the smaller area irrigated, the assessments were nearly the same as the previous year, the figures being—

		Kharif.	Rabi.	Total.
		Rs.	Rs.	Rs.
1889-90 ...	...	4,782	2,490	7,272
1890-91 ...	...	4,316	2,884	7,200

The average of rabi crops paying a higher rate than kharif being larger than the previous year, brought up the value of the assessments.

The increase in rabi is doubtless due to the certainty of the supply from the storage works.

9. The only remission necessary was an item of Rs. 10, a double rate charged for breach of rules but remitted on satisfactory explanation.

10. In addition to the water-rates for irrigation, Rs. 167 have been realized for canal produce and Rs. 3,450 for supply of water to the mills.

The payments for the latter are made at the end of December and June, so that the amount due for the extra 10 cubic feet per second of water issued to the mills from January 1891 does not appear in the figure.

The gross revenue from all sources was Rs. 10,817 compared with Rs. 10,900 of the previous year.

11. The average water-rate was 1·87 per acre compared with 1·74 of the previous year.

12. The working expenses were for—

					Rs.
1889-90	...	...	...	...	4,249
1890-91	...	...	...	...	4,422

The slight increase is mainly due to Rs. 106 spent on silt clearance.

13. The cost of measuring was 2 annas 11 pies per acre.

14. The existing trees and plantations were maintained.

15. The average discharge of the canal in cubic feet per second was for kharif 18·14 and for rabi 30·22.

The duty for kharif was 142 acres and for rabi, 43 acres.

16. The year was distinguished by an unusually heavy flood, the highest flood previously recorded having occurred on July 15th, 1882, when the discharge was estimated at 135,700 cubic feet per second, and in July 1883, estimated at 112,518 cubic feet per second. The flood of 1890-91 occurred on 21st July 1890, the discharge being estimated at 141,000 cubic feet per second, equivalent to a run-off of a little over 0·22 inches per hour from the catchment area of 1,080 square miles. These estimates are based on sections taken of the river bed at favourable sites and are approximate only. Now that the weir has been finished, more exact calculations will be possible in future.

PART II.

COMPRISING WORKS IN OPERATION FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

1. The following table shows the areas irrigated in the different districts in the Deccan and Gujarát and the consolidated revenue assessed during the year :—

Collectorates.	Number of Works.	Area irrigated.	REVENUE.			REMARKS.
			Irrigation Share.	Land Share.	Total.	
1	2	3	4	5	6	7
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ...	66	10,672	13,274	31,468	44,742	* Including the Chanvaya Tank brought on the Public Works Department list, vide paragraph 4 of Government Resolution No. 177 of 31st January 1891.
Kaira ...	*2	8,200	28,835	11,856	40,691	
Surat ...	287	12,349	49,891	1,16,621	1,66,012	
Khandesh ...	82	8,791	57,102	12,212	69,314	
Nasik ...	271	28,356	1,61,577	37,907	1,99,484	
Ahmednagar ...	2	147	353	132	485	† Excluding net loss to Government on Inam land.
Poona ...	3	509	2,857	1,015	3,872	
Sátára ...	1	133	505	335	840	
Belgaum ...	67	9,910	29,942	7,472	†37,414	
Dhárwar ...	471	64,629	1,70,848	42,706	2,13,554	
Bijápúr ...	15	763	3,407	845	4,252	‡ Net consolidated assessment.
Ratnágiri ...	3	* 1,105	4,988	374	5,362	
Total ...	1,270	145,563	5,23,079	2,62,943	†7,86,022	

2. The following table shows the actual expenditure and receipts for the year 1890-91 on all works in the Deccan and Gujarát for which only Revenue Accounts are kept :—

Collectorate.	EXPENDITURE.										ACTUAL RECEIPTS.						
	Direct Charges.							Indirect Charges	Grand Total.	Direct Receipts.			Indirect Receipts.	Grand Total Direct and Indirect Receipts.	Refunds of Revenue.	Gross Revenue less Refunds.	
	Extensions and Improvements.	Maintenance and Repairs.	Establishment		Tools and Plant.	Profit and Loss.	Total Direct Charges	Share of Collection Charges		Water-rates from Irrigation.	Miscellaneous.	Total Direct Receipts.	Share of Consolidated Revenue.				
			Director.	Executive.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Ahmedabad ...	...	946	224	1,776	50	...	9,513	1,334	13,773	60	...	60	13,274	13,334	...	13,324	
Kaira ...	1,658	4,859	...	...	...	...	...	2,931	7,474	474	99	573	28,850	29,408	...	29,405	
Surat ...	39	1,839	59	395	30	...	2,462	4,962	7,434	...	255	255	49,301	49,646	...	49,646	
Nasik ...	7,089	7,473	...	...	...	...	82,008	16,236	1,04,034	1,281	285	1,566	1,61,577	1,63,143	45	1,63,098	
Khandesh ...	5,020	2,323	657	55,330	3,886	255	...	5,710	...	158	156	57,102	57,258	...	57,258		
Ahmednagar ...	...	...	...	533	...	...	...	38	...	...	37	37	...	...	...	390	
Poona ...	...	...	...	...	...	...	...	368	...	353	875	...	675	2,857	3,552	...	
Satara ...	...	...	...	...	...	...	...	51	...	...	...	...	...	606	505	...	
Belgaum ...	...	20	1	...	4	...	25	2,994	3,019	...	...	...	20,942	22,942	...	22,942	
Dharswar ...	...	31,088	627	27,113	959	...	49,815	17,156	66,971	656	306	862	1,70,848	1,71,710	...	1,71,710	
Bijapur ...	...	343	10	76	...	...	...	434	356	790	151	...	151	3,407	2,558	...	
Ratnagiri ...	...	191	6	38	...	...	235	499	734	...	...	...	4,988	4,988	...	4,988	
Total ...	13,806	39,180	1,584	83,799	4,956	255	1,43,539	52,667	1,96,256	3,197	1,138	4,335	5,23,079	5,27,414	45	5,27,369	

* This amount represents the revenue derived from the works shown in Canal Returns No. IX. of 1890-91.

3. The total amount of revenue realized from and the working expenses of this class of works during the past three years were as follows :—

	1889-89.	1889-90.	1890-91.
Revenue realized ...	Rs. 5,25,557	Rs. 5,31,793	Rs. 5,27,369
Working expenses ...	1,57,647	1,96,228	1,96,256
Net Revenue ...	3,67,910	3,35,565	3,31,113
Percentage of Working Expenses to Revenue ...	29.99	36.89	37.21

4. The expenditure from contributions and from Pátfalla funds on all Works for which only Revenue Accounts are kept for the year 1890-91 is as shown in the table below :—

Collectorate.	EXPENDITURE.			REMARKS.
	Contributions.	Pátfallá Fund.	Total.	
1	2	3	4	5
Ahmedabad ... ..	...	.....	...	
Kaira ... ..	...	.....	...	
Surat ... ..	...	.....	...	
Násik	} 976 {	523	} 1,983	
Khándesh		484		
Ahmednagar ... ..	...	.....	...	
Poona ... ..	...	.....	...	
Sátára ... ..	...	.....	...	
Belgaum ... ..	...	.....	...	
Dhárwár	3,429	.....	3,429	
Bijápur ... ..	...	.....	...	
Ratnágiri ... ..	...	.....	...	
Total	4,405	1,007	*5,412	* Accounted for in the Finance Accounts under " Works for which neither Capital nor Revenue Accounts are kept.

AHMEDABAD DISTRICT.

5. The only new work carried out during the year under report was the improvement and extension of the Naika channel of the Khári Irrigation Sluices. This project, estimated to cost Rs. 16,274, was sanctioned as per Government Resolution No. 24 A.I.—335 of 20th February 1891, and a sum of Rs. 1,500 was granted for the year under report, but Rs. 471 only were expended. Certain additions and alterations to sluice No. 19 near Chainadra and sluices Nos. 8 and 9 on Naika branch were also carried out, and the channel below sluice No. 14 and Dhothal and Sharvani branches were cleared of silt deposit, and current and special repairs to Khári sluices, &c., were carried out during the year.

6. The receipts for the year 1890-91 amounted to Rs. 48,346 and were derived from the following sources :—

Description.	Acres.	Assessment.
I.—Irrigation above the Kalambandi villages	696	3,650
II.—Irrigation from tanks fed by the river Khári	249	1,942
III.—Irrigation from Khári sluices proper	8,525	42,754
IV.—Irrigation below the Kalambandi villages ... ..	.....	.....
	9,470	48,346

The decrease in area irrigated (from 9,877 to 9,470 acres) and revenue derived is due to unfavourable rainfall as compared with the previous year.

7. The mean rate of assessment was Rs. 5·24 on land for which water was taken by lift above the Kalambandi villages and Rs. 7·80 for lands irrigated by

the tanks fed from the river Khári. On land under the Khári sluices proper the rates are consolidated, the average share per acre respectively for land and water being as under :—

	Land share,		Water share,		Total,	
	Rs.	a. p.	Rs.	a. p.	Rs.	a. p.
Government land	1	15 2	5	2 3	7	1 5
Alienated land	2	1 6	5	5 9	7	7 3
Inámi land consolidated ... ..	.....		.....		.....	
Assessment, jiráyat land ... ..	.....		3	7 5	3	7 5

8. The working expenses during the year, exclusive of charges for revenue collections, amounted to Rs. 1,292.

9. The supply of the Juwal Tank has been improved by connecting it with the Wásna Dehal Tank with a view to utilising the surplus water of the latter. This was effected at a cost of Rs. 1,954. No further progress was made in the repairs of the tanks in the Ahmedabad District during the year. Projects for improving some of the tanks are ready, but they were not submitted for sanction as the conditions laid down in Government Resolution No. 109 W. I.—1379, dated 22nd July 1890, in regard to substantial contribution by the villagers were not complied with. It is hoped that some solution may shortly be arrived at in regard to these old tanks.

KAIRA DISTRICT.

10. The only irrigation work in this district during the year 1890-91 was the construction of a waste weir to the Chanvaya Tank. This tank has a catchment area of 7 square miles, the tank itself having an area of 36 acres 11 gunthas and irrigates about 104 acres of rice, from which a total revenue of Rs. 893 is received.

During heavy floods the old waste weir was found insufficient, and the banks were breached and damage done to the adjacent fields.

A new waste weir was under construction, 130 feet in length, of brick, on a concrete foundation.

The banks adjacent to the weir have also been raised and strengthened by the cultivators as their contributions to the work. The estimated cost of the work is Rs. 2,146, of which Rs. 1,186 were expended during the year.

SURAT AND BROACH DISTRICT.

11. During the year under report four irrigation tanks of the Surat Collectorate and two of the Broach Collectorate were repaired at a total cost of Rs. 1,794 as detailed below :—

SURAT.				BROACH.			
Name of Taluka.	Name of Village.	Name and Revenue Survey Number of Tank.	Amount of Expenditure.	Name of Taluka.	Name of Village.	Name and Revenue Survey Number of Tank.	Amount of Expenditure.
			Rs.				Rs.
Bulsar	Atal	Atal	39	Anklesvar ...	Kanthia-Jal ...	Nauri Tank, No. 38.	487
Bardoli	Wadoli	Mota Tank, No. 41.	574				
Do.	Sarbhon	Ghaya Tank, No. 42.	.....				
Olpid	Rosad	Tapu Tank, No. 67.	371		Sisodra	No. 1	3
Do.	Karanj	Neri Tank, No. 26.	39			Total	490
		Total	1,304.				

The expenditure on repairs to tanks is small in comparison with former years and has now practically ceased on account of Government Resolution

No. 109 W. I.—1379 of 22nd July 1891, which ruled that no repairs to tanks were to be taken in hand unless aided by substantial contributions from villagers. The following table shows the total area irrigated and the consolidated revenue assessed on tanks, as reported in Canal Return No. VIII. for the year 1890-91 by the Collectors of the district :—

District.	Area irrigated.	Net consolidated Assessment.	Irrigation share.	Land share.	Remarks.
	Acres.	Rs.	Rs.	Rs.	
Surat ...	12,349	1,66,012	49,391	1,16,621	
Broach ...	...	...	...	...	No return submitted by the Collector.

12. The irrigation tanks in the district are under the management of the Revenue Department and no separate establishment is entertained on this account. Receipts also are accounted for in the Revenue Department.

NÁSIK DISTRICT.

13. There are in all 191 permanent bandháras in the Godávari basin of the Násik District in six different tálukas as shown below :—

				No. of Bandháras.
1. Sinnar Táluks	...	...	...	45
2. Násik do.	...	...	...	50
3. Dindori do.	...	...	...	27
4. Niphád do.	...	...	...	27
5. Chándor do.	...	...	...	40
6. Yeola do.	...	...	...	2
Total ...				191

14. In accordance with the procedure which obtains in respect of these works they were inspected by this department during the year 1890-91, at the request of the Revenue authorities, and proposals as under were made for repairs and improvements :—

No.	Táluks.	Number of works surveyed and estimated.	Repairs.	Amount.	Improvements.	Amount.
				Rs.		Rs.
1	Sinnar Táluks	9	3	426	6	1,623
2	Násik do.	11	4	248	7	1,856
3	Dindori do.	11	6	610	5	1,084
4	Niphád do.	...	...	...	...	...
5	Chándor do.	8	5	1,666	3	255
6	Yeola do.	...	...	...	...	...
Total ...		39	18	2,950	21	4,818

15. During the year estimates for improvements and repairs were sanctioned to the extent of Rs. 4,021, of which Rs. 503 was contributed by the irrigators and Rs. 277 by the Local Board.

16. The system under which these Minor Irrigation Works are maintained is that the repairs and improvements of head-works and other permanent masonry structures are carried out at the expense of Government: that repairs of banks and maintenance of channels fall on the irrigators as a rule, but

when beyond the powers of the irrigators to cope with, are undertaken by Government.

17. A statement of rainfall in the different talukas of this district is given below :—

No.	Name of Taluka.	Rainfall, 1889-90.	Rainfall, 1890-91.
1	Sinnar Taluka	23·02	25·23
2	Násik do.	22·93	29·37
3	Dindori do.	22·21	34·64
4	Niphád do.	15·39	20·58
5	Chándor do.	23·44	34·49
6	Yeola do.	24·75	21·96

During the year the monsoon was late. Most of the rivers and nálas in the basin were not fed by springs till late in September and October, and it was hard for irrigators of Niphád, Chándor and Yeola especially to maintain their irrigation. Perennial crops depended for their supply of water upon wells till late in September, and the rainfall on the basin generally was insufficient and untimely for the purpose of irrigation. Insufficiency of rainfall has been felt continuously for the last five years.

18. During the year there were six calls for converting temporary bandhásas into permanent structures for which estimates were submitted. Three of these proposals had to be abandoned on the grounds of inadequate return for the outlay. The other proposals are still in abeyance for want of sufficient co-operation on the part of the irrigators.

KHÁNDESH IRRIGATION DISTRICT.

19. The British Government has inherited from ancient times a series of weirs on almost every perennial stream in Western Old Irrigation Works. Khándesh. These old weirs or “bandhásas” are found from as near the source of the rivers as suitable land for irrigation exists, and extend as far down as it is possible to construct them at a reasonable cost.

20. Originally the weirs appear, from the existence of curious square holes in the rock, near the sites of many of the existing works, to have been wooden structures or temporary dams of earth strengthened by wooden posts. Wood has however become scarce and now the dams are either of solid masonry or occasionally of earth or sand.

* Bandhásas—	Irrigating villages—	21. The number of bandhásas in working order now, is
Khándesh ... 77	Khándesh ... 92	about 200*, but there are also
Násik ... 84	Násik ... 96	many ruined and abandoned ones.
161	188	

22. The channels which lead the water off from the bandhásas to the irrigated fields usually skirt along the river bank with little or no protection against the river floods until they reach the higher land where in close proximity to the village site the irrigated area or “thal” is generally found. The alignments of the channels show little regard for cross drainage or levels on the part of the irrigators. As a rule physical obstacles were avoided by contouring, and nálas were crossed on a level, while the bed falls of the channels are often very insufficient. The ground at the commencement is often very broken and originally the channels ran for long distances up the hollows or intercepted streams, crossing the latter with a mud bank which was carried away at every freshet, then down again to get round the hillocks, in and out in a most tortuous course, at times clinging to the precipitous cliffs of the river until more favourable ground was reached. It is extraordinary in some places to note with what patience very considerable difficulties have been overcome.

23. The original channels have in course of time been improved by the construction of aqueducts and weirs at the nála crossings, and in places lining

walls have been built as a protection against the river, and diversions cut to straighten the alignment, but the original features of the channels have only been modified and their inherent defects ameliorated.

24. The total area irrigated by these old works is 23,972 acres, exclusive of those used occasionally for temporary irrigation. The revenue amounts to *Rs. 1,59,707 according to the survey settlement. *

* Government Irrigation share as shown in bandhára list.

25. The assessment is levied under the settlement effected by Mr. Pedder in the years 1865.—70. It varies very largely in different villages according to the nature of the water-supply and other considerations.

26. The highest assessment is that of the village of Bez in the Kalvan Taluka, Násik District, where 522 acres 29 gunthás pay Rs. 6,535 for water alone, giving a rate of Rs. 12½ per acre.

27. The assessment is paid just like the land tax irrespective of crops grown or water utilized. Being fixed with due reference to the occasional failure of the water-supply, claims for remission are not usually entertained on account of deficiencies in the supply.

28. The way in which the irrigation is worked affords a very interesting study on the details of the ancient village community system.

29. The irrigated area or “thal” is divided up into several plots or “phads”. Each irrigator has his share or field in each ‘phad’. The ‘phads’ are sown out wholesale in regular rotation of crops. Thus one ‘phad’ would be all sugarcane, the second rice, the third wheat, and so on; the first year, and according to rotation the sugar would give place to wheat, the rice to sugar, and the wheat to rice in the next year, and so on.

30. This arrangement is extremely convenient for the distribution, and in many other ways it is very economical. Instead of each man hedging his own plot, the ‘phad’ is enclosed as a whole. Only one watchman is required, while the guiding of the water from plot to plot is effected by one individual.

31. To settle or avoid disputes about the distribution there is an important village officer called the *watadia*, who often enjoys a small area of inám within the ‘Thal’ and always receives “doles” of so much grain or other produce from the irrigators.

32. Then there is the village patkari, also usually endowed with inám land and given ‘doles’, whose duty it is to attend to the channel, shutting off the water when floods come down, making petty repairs and the like.

33. The head of the whole system, as of every thing else in the village, is the pátel, whose duty it is, when the state of the channel requires it, to call out the irrigators in a body and set them to work at the necessary clearances and repairs.

34. So long as each village has its own bandhára, the system could not possibly be better arranged. In spite of the frequently noticed apathy of pátels and idleness of patkaris somehow or other the irrigators get as much water as they want and concord prevails.

35. When, however, two or more villages irrigate from one bandhára, there is unceasing warfare between them, and opposite interests of the different parties often lead to the ruin of the irrigation.

36. Each village is most tenacious of its own rights to the water, and on the slightest excuse a regular canonade of petitions and cross-petitions bursts out. Nor is the pen the only weapon which a village with a real or imaginary grievance has been known to use. There are instances of the community having sallied forth with pickaxes and crowbars and demolished certain repairs being effected by Government to a bandhára above them. Another way in which the people show how keen they are on matters affecting their irrigation is in their frequent representations of the injustice they think Government guilty of when two or three thousand rupees are spent on a neighbouring channel and their own is for a year or two neglected.

37. It will be understood from what has been said that the people themselves keep their channels more or less clear of silt, and manage in general to keep as much water as they require flowing on to their fields.

38. When however any serious damage occurs which it is beyond their own means to repair, they expect Government to come to their aid. Until a disaster occurs the Irrigation Department has nothing whatever to do with the channels, and indeed some Revenue authorities have held that the less the Irrigation Department has to do with these works, except in the way of repairing damages, the better.

39. Thus the Irrigation Department occupies the position of "Deus Ex-Machina." It is an outside power unconcerned in and unable to exercise authority over the practical daily working of the machine. When however the machine breaks down it has to repair damages.

40. These damages are in a large measure the simple result of careless inattention on the part of those who daily work the machine.

41. Earthen channels require constant care and attention. They are liable to various accidents when they are neglected. Many of the channels are in steep side long ground and unless the banks are kept up to a proper level above the water, breaches occur which result in the cutting of deep fissures in the sloping ground below the breach, and such places cannot be repaired without the building of a very costly wall. Watchful attention and a basket full of earth now and then are all that is required to avoid such damage. Again crabs and rats are fond of boring holes in such places. Careful attention to the first appearance of their depredations here also will prevent serious mischief. Cattle and people have a genius for selecting places to cross the banks just at those particular spots where the wearing away of the earth is highly dangerous. The piling up of a few stones or the setting of a little hedging is all that is required. Seeds are apt to lodge in any little crevice of masonry. If the young trees are not removed as soon as they sprout, it is difficult to eradicate them afterwards, and when left as they often are to grow into fine timber, of course they cause the ruin of the work. There are many other little things of this kind, which are simple instances of the necessity for daily petty maintenance and careful tending of the channels.

Latterly it has become generally recognized that the village system, admirable as it is, requires looking after. The Revenue authorities, both in Násik and Khándesh, have endeavoured to administer a stimulant to the village system, but it is now found that Revenue authority unless backed by legal powers is not potent enough to produce the necessary activity.

42. The revenue is found to be falling off. In several places permanent *bágáyat* 'Thals' are lying fallow or sown with dry-crops. The cost of repairs is becoming greater and generally the outlook suggests that it is time to consider what remedy can be applied to arrest further decay, if not to increase the prosperity of the irrigation.

43. It is however not so much a matter of revenue. The truth is, that irrigation is vital to the prosperity of the whole of Western Khándesh. There are some old *bandhárás* which were ruined 20 or 30 years ago, and have never been restored owing to the expense involved and the objections of the irrigators lower down the river. At such villages it is painful to note the poverty-stricken aspect of the houses and to hear the peasants' complaints that they cannot even afford to buy the cheap strips of the commonest cotton clothing which they wear, and their bitter grievance is that their lands are all in the hands of the money-lender.

44. The measures taken to improve and repair these works can be seen from the following extract from the Administration Report of 1890-91:—

(a) "At Nampur the protection of the right flank of a very fine *bandhára* has been practically completed by the addition of a substantial wing wall and the paving of the ground to protect the foundations from water falling over the flank wall in high flood.

(b). "The Jaikbeda protection works mentioned in last year's Administration Report are now nearly completed. The small groin constructed with logs of *peppal* trees and

weighted with rubble stones has so far proved successful. The peepal logs however did not take root and grow as was intended. Some additional groins have now been proposed. The land behind the groins is now covered with planted trees which are doing well, but the young babul trees which have sprung up of themselves (the land being protected from goats) are likely to afford the best protection against high floods. The hole in the flank wall has been filled in and the additional masonry to the flanks completed.

"(c) Other works carried out during the year comprise on aqueduct on the Wazdara channel, culverts under the Sangameshwar and Satána channels, both built with concrete arches. A rather large aqueduct on the Ghorda channel is in progress. Extensive repairs and improvements to Bhadna, Pimpalner, Borban, Pankheda and Bhaigaon have been completed or are in progress. A new bandhara has been built for Deola and many other petty works have been carried out both from Imperial and from Pátáfa funds. Altogether Rs. 19,684 have been spent from Imperial funds and Rs. 1,009 from Pátáfa on the second class works."

"Several channels have been under survey. For Sháháda a complete project is now almost ready. All the survey and designing work is done and the estimates are being completed. The main channel which serves seven villages is four miles long. The distributaries one for each village are also several miles each in length. The improvements contemplated are provision of cross drainage works, improvement of gradient and alignment and the provision of masonry falls to break the excessive bed inclination of some of the distributaries. Similar improvements have been designed for Datarti, the project for which is practically complete. Plans and estimates for a new bandhara and channel for Chiksa have been submitted for sanction. The Kására and Jaikheda channels have been under survey, but the designs are not far advanced yet. A new bandhara and channel have been surveyed and designed for Aklad Morana. This project is in a semi-complete state and promises well. Projects for the improvement of Kánási, Deothán, Bhadwan and Visápur, and Pátóna bandhara and channels have been submitted for sanction. A number of minor repair estimates are also in hand."

45. The following is a summary of the area irrigated and the revenue derived from these works during the year :—

		Khándesh.	Násik.	Total.
		Acres.	Acres.	Acres.
Area irrigated at consolidated rates...	...	8,872	10,471	19,343
Area at separate water-rates	...	.....	360	360
	Total	8,872	10,831	19,703
		Rs.	Rs.	Rs.
Consolidated revenue	...	80,008	92,266	1,72,274
Irrigation share of consolidated revenue	...	58,292	80,508	1,38,800
Separate water-rates	...	.....	1,207	1,207
	Total	58,292	81,715	1,40,007

46. The working expenses (direct) amount to—

		Rs.
Original works and Improvements	...	11,174
Repairs	...	8,510
Establishment	...	43,045
Tools and Plant	...	3,681
Refund of Revenue	...	44
Profit and loss	...	255
	Total	66,709

47. In conclusion a few general remarks seem to be required with reference to the cost of the maintenance and the Revenue.

(a) A fairly strong establishment is absolutely necessary to carry out the present policy. The more important of the channels are being

thoroughly surveyed and the means and cost of supplying their deficiencies investigated. Work of this nature takes a long time, as any attempt to hurry over such an investigation inevitably leads to failure and inefficiency. The normal establishment required for carrying out works sanctioned and surveys is one Assistant Engineer, three Upper Subordinates, and four sub-overseers. The actual establishment now employed is nearly up to this standard and the cost of it, including the necessary share of the Executive Engineer and office, may be set at Rs. 26,500. The accounts give other figures, because actual cost of establishment employed is not charged, the rule being that after the proper shares of establishment charges have been made to the other works the whole of the balance goes against second class irrigation works and thus these works are generally overburdened with such charges.

(b) Rs. 20,000 represents what fairly ought to be expended annually on repairs and improvements and adding for tools and plant Rs. 1,500, the total expenditure may be taken as Rs. 48,000.

(c) The revenue is now Rs. 1,40,000 and ought, if the present policy is continued and some necessary legislation undertaken, to increase considerably. The expenditure, therefore, represents 36 per cent. of the revenue, which, taking the peculiar character of the works into consideration, seems reasonable.

AHMEDNAGAR DISTRICT.

48. In the Ahmednagar Collectorate there are only two works situated in Akola Taluka, viz:—

1. Sāvargaon Bandhara,
2. Gardani Bandhara,

and the information regarding revenue from and expenditure on them is given in tables under paras. 1 and 2 of this part.

POONA DISTRICT.

49. The following are the works in the Poona Collectorate for which only Revenue Accounts are kept:—

1. Dam at Kasur.
2. Dam at Wadaj.
3. Dam at Agur.
4. Dam at Narayangaon.
5. Dam at Patus.
6. Tank at Wadhana.

The description of these works was given in the Revenue Report for 1881-82. No expenditure was incurred on these works for maintenance and repairs during the year 1890-91.

BELGAUM DISTRICT.

50. In the Belgaum Collectorate there are 69 old irrigation tanks, each irrigating 50 acres and more land, in charge of this department for the purpose of maintenance and repair. Of these only one, the Gadikeri Tank, has been recently improved at a cost of Rs. 9,279 and classed in the category of works for which Capital and Revenue Accounts are kept. These 69 tanks irrigate a total area of 10,278 acres of land, Government and inam, yielding a consolidated revenue of Rs. 52,156; a complete list of them will be found published as an Appendix to the printed Irrigation Revenue Report for 1889-90.

51. For the reason that the Executive Engineer had not establishment for the work, and also that the policy to be pursued as regards contributions from ryots for repairs is yet awaiting settlement, little or nothing could be done to any of these tanks by way of repairs during the year 1890-91; the survey of only one tank, Komarkedí, was carried out at an expenditure of Rs. 24.

DHARWAR DISTRICT.

52. According to the printed list of 1884, there are in the Dhárwar Collectorate, 473 tanks, in charge of this department, irrigating an area of 64,406 acres of land, and yielding a consolidated revenue of Rs. 2,71,037.

53. During the year under report a sum of Rs. 24,516, of which Rs. 3,430 was contribution, was expended on repairs to 21 tanks, and on surveys of 3 tanks. Repairs to a number of tanks had to be postponed in consequence of the non-settlement of the contribution question, which is still engaging the attention of Government.

BIJA'PUR DISTRICT.

54. It appears that there are 17* Irrigation Works in this District, tanks, streams and wells all told, on the Public Works list for repair. These, with the exception of Mamdápúr, Kámatgi, Timságar, Párvati and Kendur tanks, irrigate an area each ranging from 6 to 33 acres or *below* the 50 acres limit. In this list also is included the Nilgund Tank, which originally irrigated 6 acres only, but which, after certain improvements had been carried out to it was expected to be capable of irrigating 347 acres. Accordingly an outlay of Rs. 8,915 was incurred on this work and the tank brought on the list of works for which Capital and Revenue Accounts are kept. The question whether this tank should not be abandoned and struck off this list, in view of the anticipations of increased irrigation having proved futile, is now before Government. A revised list of tanks in the Bijápúr Collectorate is in course of preparation.

55. During 1890-91 repairs costing Rs. 951 to a masonry escape on Chigri Nála on the low level canal of the Mamdápúr tank were completed and the breach in the catchment bund of the Kámatgi Tank was built up at an outlay of Rs. 1,579.

RATNA'GIRI DISTRICT.

56. There are 4 tanks in this district, repairs to which are executed by this department. The subjoined table gives the principal particulars of these tanks :—

Name of Tank.	Nature of Dam.	DESCRIPTION OF DAM.			Total Area commanded.
		Length	Height.	Number of Sluices.	
		Feet.	Feet.		Acres.
Pát Tank	Earthen ...	2,370	21½	3, each 2' 9" × 6'	350
Warad	Do. ..	2,520	18	3, each 5½ × 14' & one 3' × 3'	310
Pendur	Do. ...	1,220	20	Notch in the dam.	300
Dhámápur	Do. ...	790	20	3 do.	340

57. Current repairs costing Rs. 155 were carried out during 1890-91 to the wooden sluice gates of the Pat and Warad tanks.

SÁTARA DISTRICT.

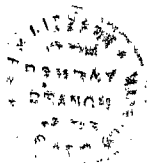
58. There is only one old irrigation work in the Sátara Collectorate, *viz.*, the Boregaon Dam, which is in charge of the Revenue Department. It irrigates an area of 133 acres, the consolidated revenue assessed being Rs. 840.

Agricultural Works.

The following is an abstract of the statement of consolidated revenue from
 age and protective works in the Broach district for 1890-91 :—

	Expenditure during the year.	Total Expendi- ture up to date.	Realized from sale of occu- pancy rights.	Balance against Capital.	Area assessed under settle- ment.	Land taken up for cultivation.	Assessment of land taken up for cultivation.	Irrigation share.	Percentage of Revenue on Capital.
	Rs.	Rs.	Rs.	Rs.	Acres.	Acres.	Rs.	Rs.	Rs.
Lora Madaphar and Jantram Channel	2,613	14,027	1,079	12,948	2,750	1,155	4,193	Nil.	32.37
Amanpur-Nadiad Channel ...	2,090	11,178	1,807	9,371	960	685	2,825	Nil.	30.14
Samadpur Kadodra and Paniadra Channel	175	7,072	3,800	3,272	495	477	1,006	Nil.	30.74.
Total ...	4,878	32,277	6,686	25,591	4,225	2,317	8,024	Nil.	31.35

The total capital expenditure to date on the works has been Rs. 32,277, from which must be deducted the sum of Rs. 6,686 realized from sale of occupancy rights, which leaves the capital outstanding at Rs. 25,591, and the revenue of Rs. 8,024 for 1890-91 gives a return of about 31.35 per cent.

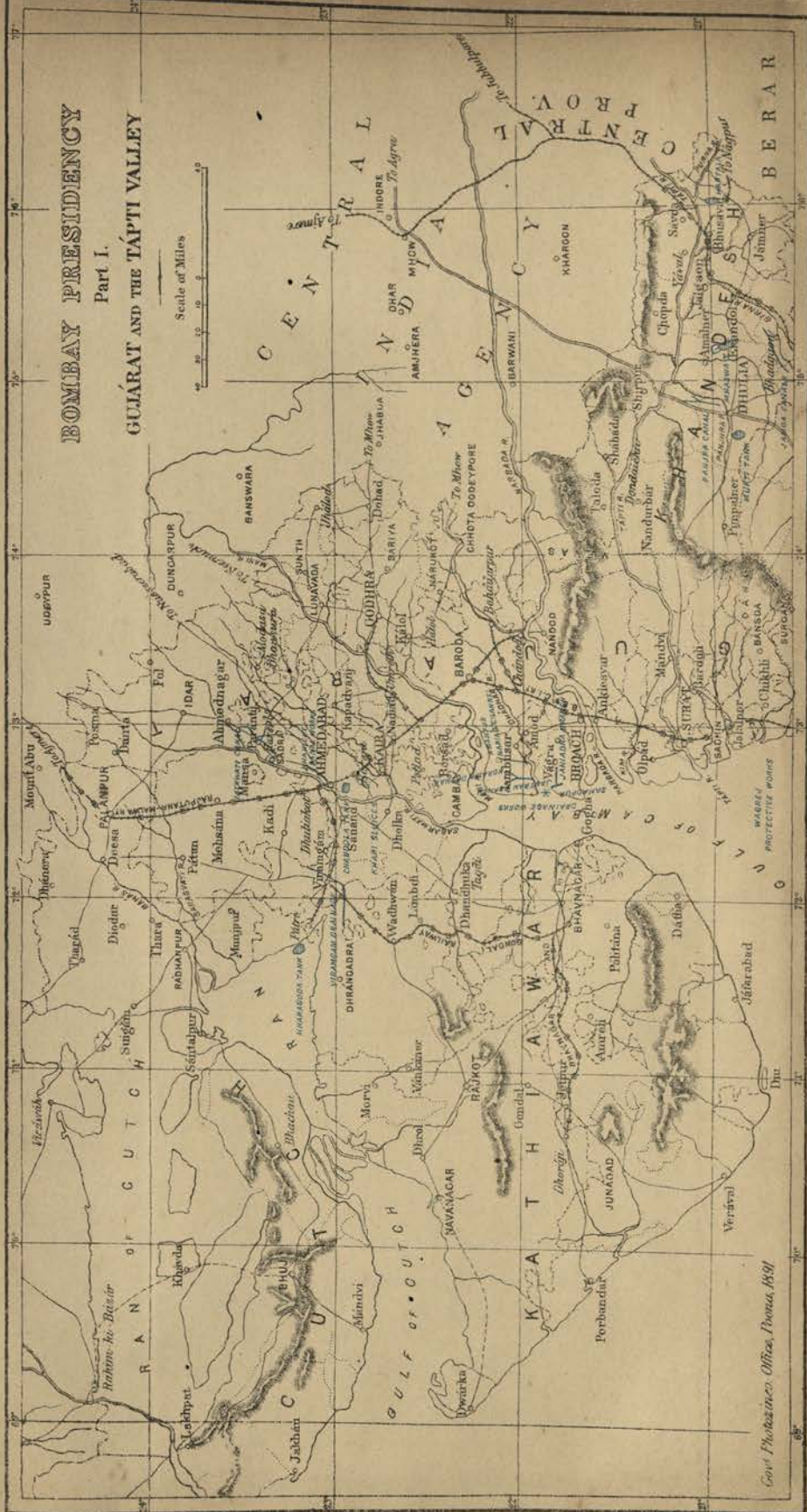


BOMBAY PRESIDENCY

Part I.

GUJARAT AND THE TAPTI VALLEY

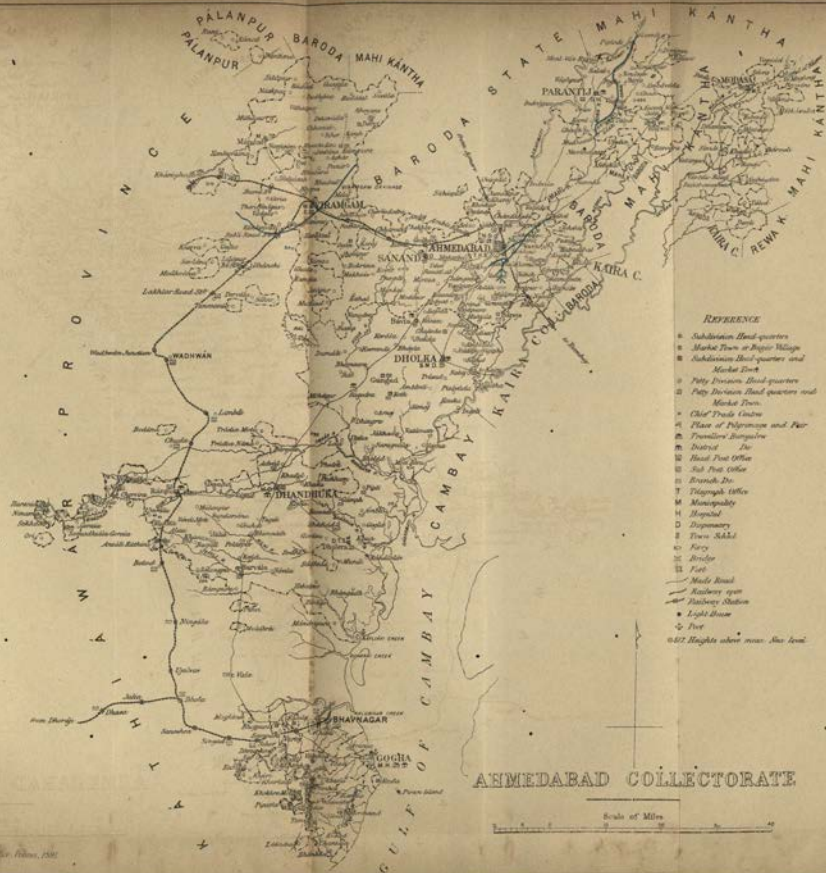
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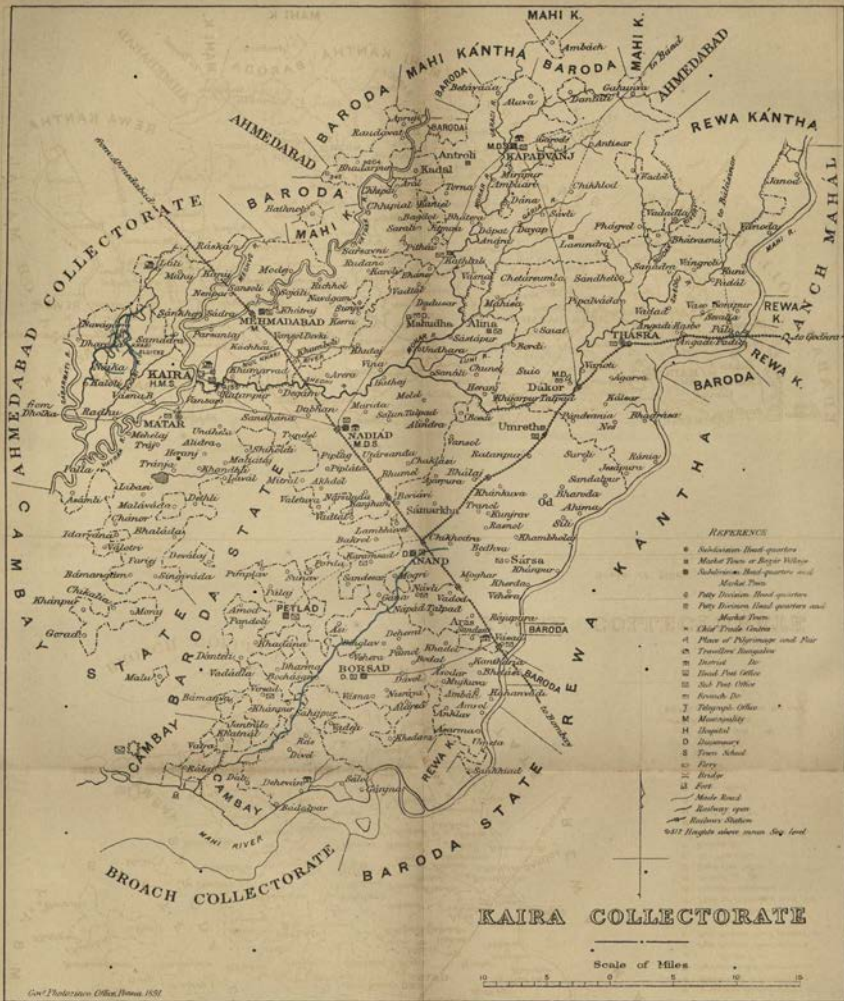


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* JAMNAGER TALUKA. — L. JAMNAGER TALUKA CHANNEL. —
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 JAMNAGER TALUKA. — JAMNAGER TALUKA. —







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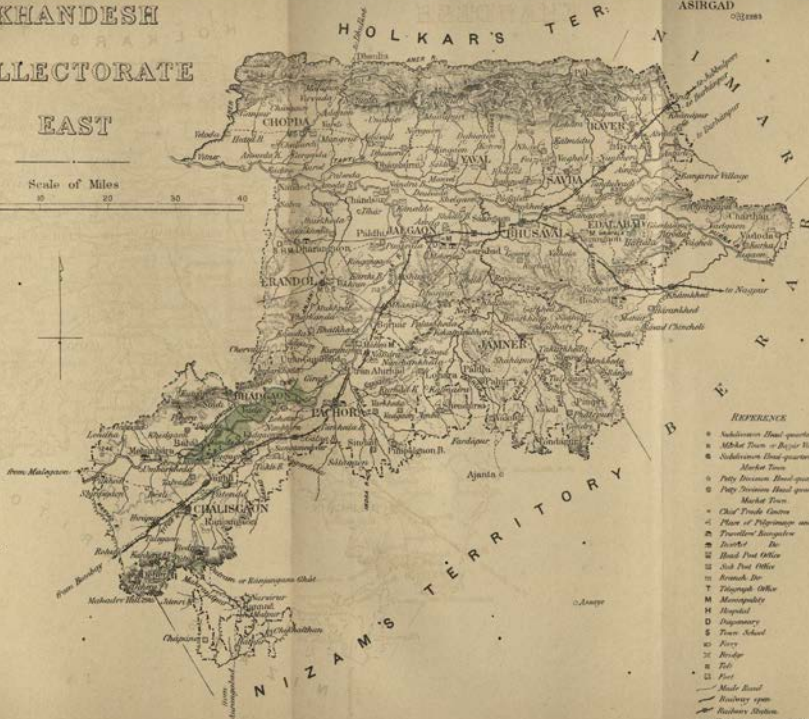
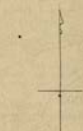
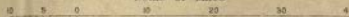
- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Paddy Division Head-quarters
- Paddy Division Head-quarters and Market Town
- Chief Trade Centre
- Floor of Jurisdiction and their
- Traveller Bungalows
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Toll
- Fort
- Mails Road
- Railway open
- Railway Station
- Light House
- Port
- 277 Height above mean Sea level
- Drainage Channels



Scale of Miles.

KHANDESH COLLECTORATE EAST

Scale of Miles



ASIRGAD
022883

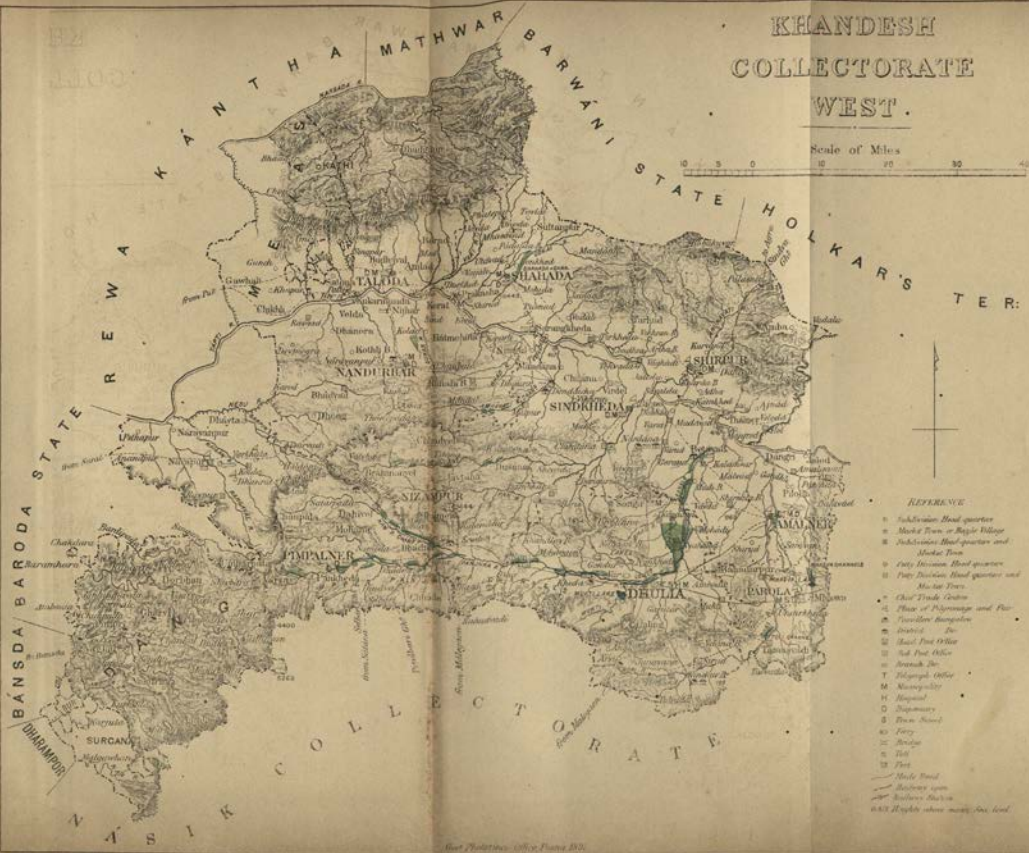
REFERENCE

- Subdivision Head quarters
- Mhatra Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Revenue Head quarters
- Petty Revenue Head quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- Principal Bazar
- District B.
- Head Post Office
- Sub Post Office
- Branch Do.
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Tel.
- Post
- Made Road
- Railway open
- Railway Station

807 Heights above mean Sea level

KHANDESH COLLECTORATE WEST.

Scale of Miles



NASIK COLLECTORATE

Scale of Miles



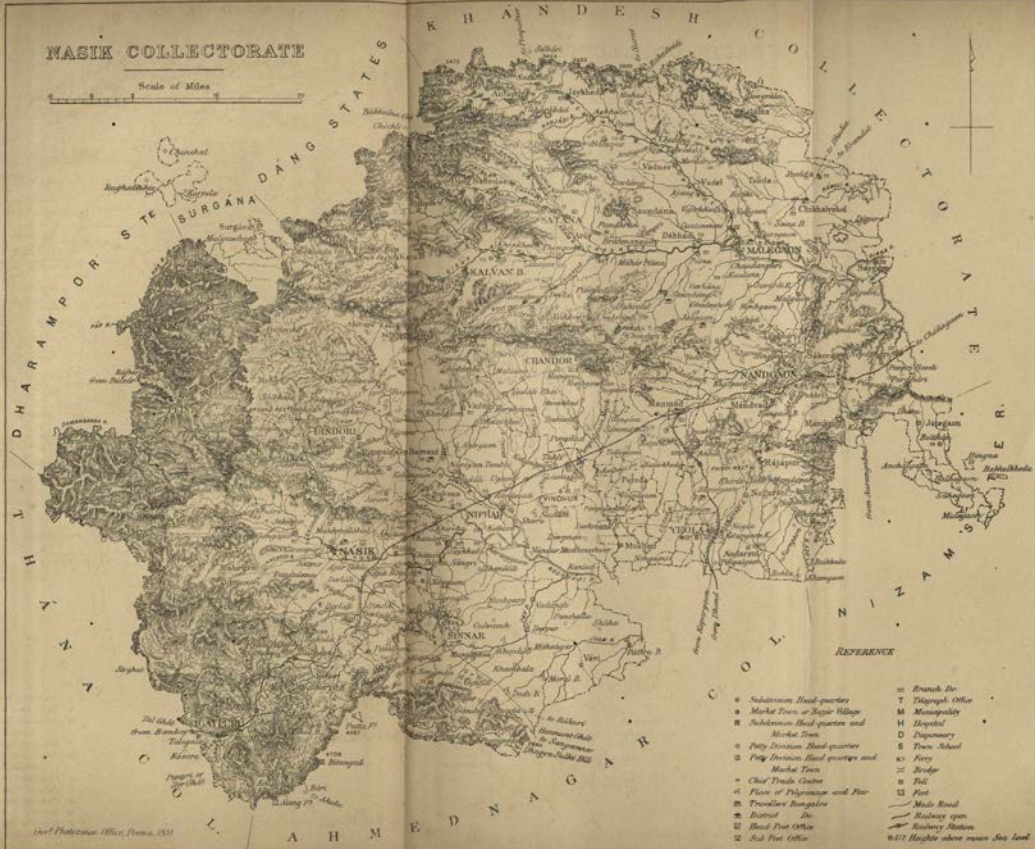
REFERENCE

- | | | |
|--------------------------------|-------------------|--------------------|
| ■ Substation | Head quarters | □ Branch Dist |
| ● Market Town | or Bazaar Village | □ Telegraph Office |
| ■ Substation | Head quarters and | M Municipality |
| ● Market | Town | H Hospital |
| ○ Paddy Division | Head quarters | D Dispensary |
| ● Paddy Division | Head quarters and | S Town School |
| ● Market | Town | □ Ferry |
| ● Chief Trade | Union | □ Bridge |
| ▲ Place of Pilgrimage and Fair | | □ Toll |
| ■ Travellers Rest | | □ Fort |
| ■ District | | — Made Road |
| ■ Head Post Office | | — Railway span |
| ■ Sub Post Office | | — Railway Station |

800 Feet above mean sea level

NASIK COLLECTORATE

Scale of Miles



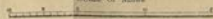
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- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- Frontier Bungalow
- District
- Head Post Office
- Sub Post Office
- Branch Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Toll
- Fort
- Made Road
- Railway line
- Railway Station

657 Heights above mean Sea level

COLLECTORATE.

AHMEDNAGAR COLLECTORATE

Scale of Miles



REFERENCE

- Subdivision Head quarters
- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centres
- ▲ Place of Pilgrimage and Fair
- ▲ Traveller Bungalows
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- Telegraph Office
- M Municipality
- H Hospital
- D Dispensary
- S Town School
- KO Ferry
- ~ Bridge
- ~ Rail
- ~ River
- ~ Main Road
- ~ Railway open
- ~ Railway Station

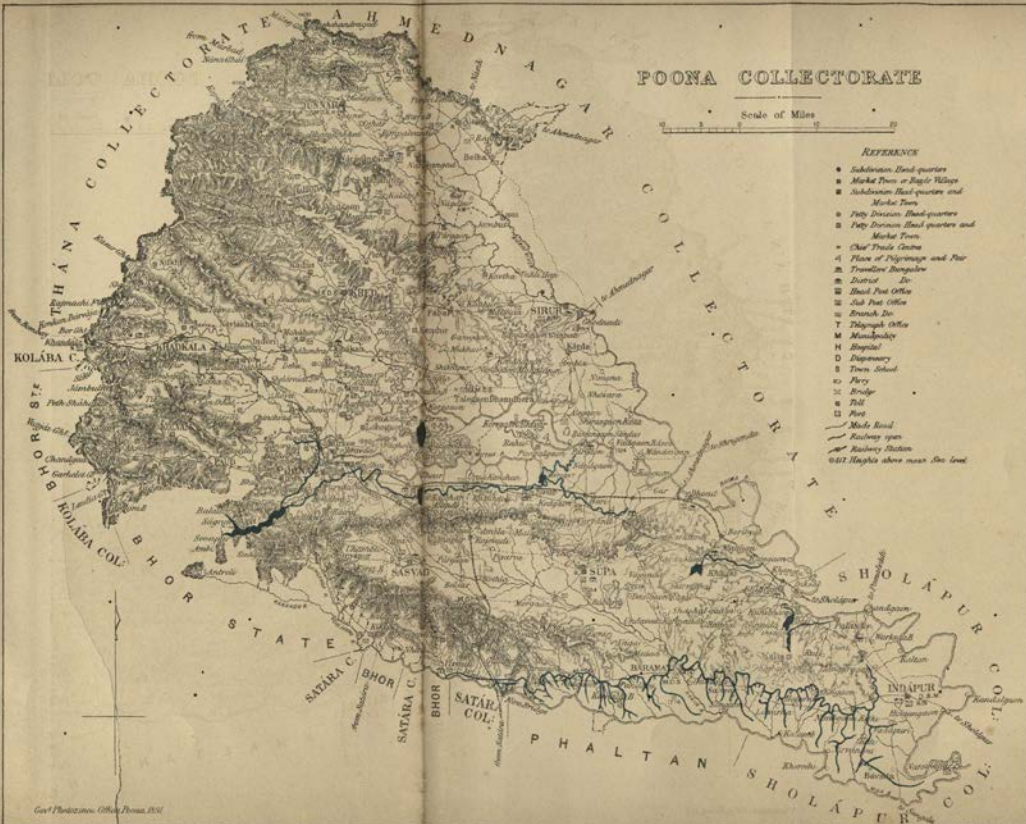
647; Heights above mean Sea level

POONA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief Trade Centre
- A Place of Pilgrimage and Fair
- Travelling Bungalow
- District Office
- Head Post Office
- Sub Post Office
- Branch Office
- T Telegraph Office
- M Municipality
- H Hospital
- D Dispensary
- T Town School
- o Ferry
- Bridge
- Toll
- Fair
- Main Road
- Railway line
- Railway Station
- 647 Heights above mean sea level



SHOLAPUR COLLECTORATE

Scale of Miles



SATARA COLLECTORATE

Scale of Miles



REFERENCE

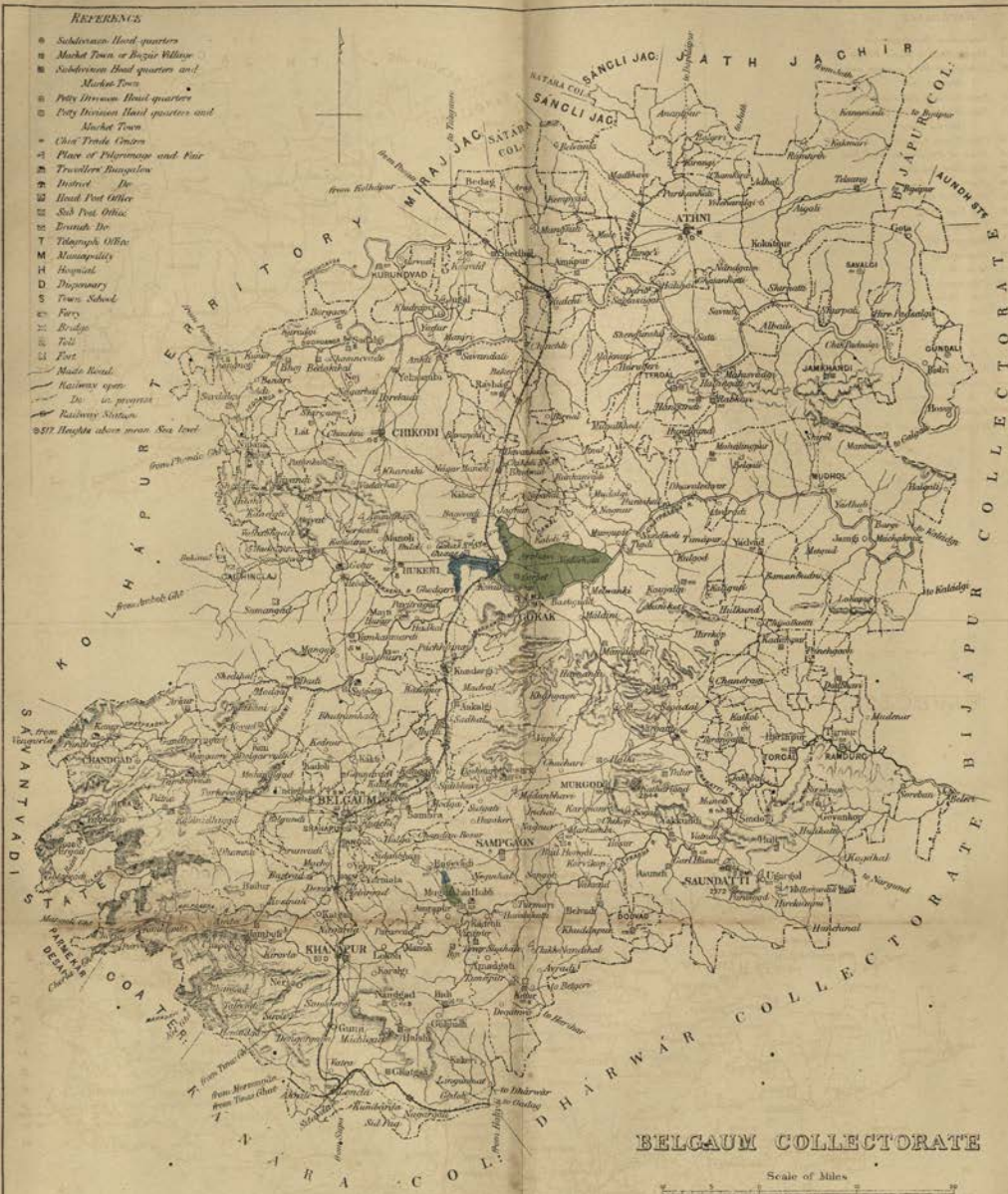
- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Pargana Head-quarters
- Pargana Head-quarters and Market Town
- Chief Trade Centre
- Place of Pilgrimage and Fair
- Travellers' Bungalows
- District
- Head Post Office
- Sub Post Office
- Branch District
- Triangulation Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Place of Pilgrimage and Fair
- Travellers' Bungalows
- District
- Head Post Office
- Sub Post Office
- Branch District
- Railway Station

6517 Heights above mean Sea level



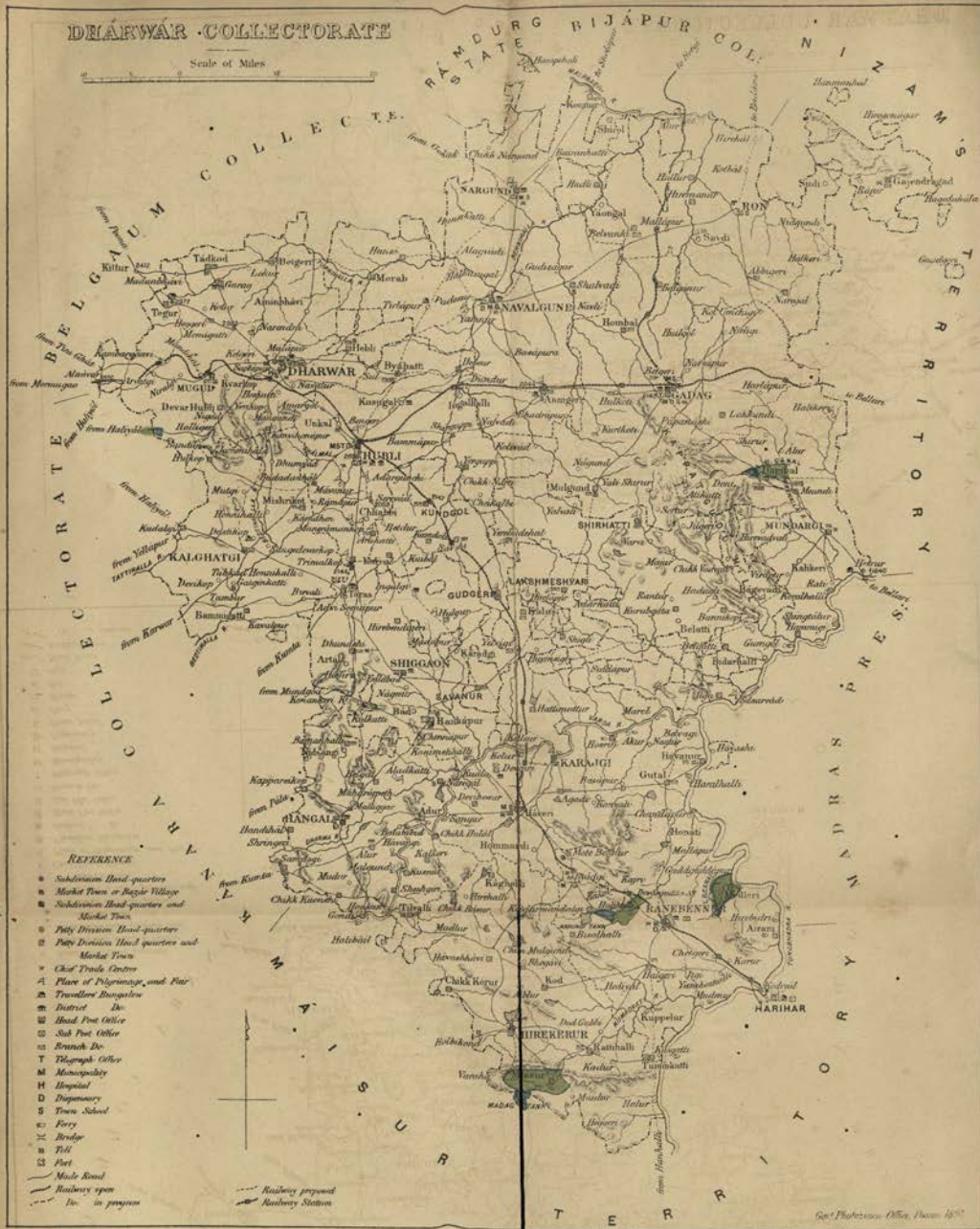
REFERENCE

- Subdivision Head quarters
- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters and Market Town
- Chief Ponds Orans
- Place of Pilgrimage and Fair
- Travellers Bungalow
- District Jail
- Head Post Office
- Sub Post Office
- Electric Br
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Tel
- Post
- Made Road
- Railway open
- Do in progress
- Railway Station
- 557 Heights above mean Sea level



DEHARWAR COLLECTORATE

Scale of Miles



Gen'l Photocopy Office, Room 1651

*Revenue Report of Irrigation Works
in the Deccan and Gujarat for
1890-91—Review of the.*

• No. 5 W. I.—19 of 1892.

Public Works Department.

Bombay Castle,
6th January 1892.

Letter from the Examiner of Public Works Accounts, No. B.-3—2172, dated 8th October 1891.

Submits statements in connection with the Irrigation Revenue Report of Works in the Deccan and Gujarat for the year 1890-91.

Letter from the Chief Engineer, Central Division, No. 5109, dated 9th October 1891.

Forwards the Revenue Report of Irrigation Works in the Central Division, Parts I. and II., for the year 1890-91.

Letter from the Superintending Engineer, Northern Division, No. 4934, dated 18th October 1891.

Forwards the Irrigation Revenue Report for 1890-91, Parts I. and II., with maps.

Letter from the Chief Engineer, Southern Division, No. 2620, dated 16th October 1891.

Forwards the Revenue Report of Irrigation Works in the Southern Division for 1890-91, with statistical statements and map of the Belgaum Collectorate. Makes remarks. Adds that Part II. of the report will follow.

Memorandum from the Chief Engineer, Southern Division, No. D.—1589, dated 12th November 1891.

Referring to Government memorandum No. 655 I., dated 6th idem, forwards Part II. of the Irrigation Revenue Report for 1890-91.

RESOLUTION.—The salient points of the year's operations are brought out in the general remarks prefacing the report.

2. The number of works in operation, included in Part I., is the same as in the previous year. The capital expenditure amounted to Rs. 6,53,872, and was incurred principally on the Nira Canal, the Gokak Canal Storage Works, the Mutha Canals and Maini Tank. That on the Nira Canal was mainly on the Storage Works at Bhatghar: the Gokak Storage Works were practically completed: a new set of pumps for the Poona Water-supply was purchased at the cost of the Mutha Canals capital account, and the head-works of the Maini Tank were rendered more secure.

3. The entire capital outlay at the end of the year stood at Rs. 2,49,15,334, including Rs. 2,90,679 on three projects which are still in abeyance.

4. The net irrigable area under command was increased from 533,313 to 535,762, or by 2,449 acres only.

5. The area irrigated by all the works taken together was 75,901 acres as compared with 86,599 acres in the previous year, showing a falling off of 10,698 acres, which was due to favorable rainfall and principally to exceptionally favorable rainfall in the rabi season in the tracts commanded by the Nira and Mutha Canals.

6. The principal crops irrigated were jowari and bajri (22,371 acres), groundnut (10,527 acres), wheat (10,343 acres), sugarcane, garden and orchards (9,874 acres), gram (5,332 acres), and rice (4,809 acres). The falling off as compared with the previous year was principally in the areas of jowari and bajri (8,514 acres), wheat (1,911 acres), and gram (1,001 acres). There was a further slight falling off in the area of sugarcane and an increase in the areas of groundnut and rice.

7. The assessed revenue amounted to Rs. 4,44,281 against Rs. 4,49,838 in the previous year. The decrease of Rs. 5,557, or $1\frac{1}{4}$ per cent., was in the water-rate assessments on the irrigated lands, and is accounted for by the decrease in area. The average water-rate per acre was Rs. 4 09 as compared with Rs. 3 66 in the previous year, the increase being due to the increases in the higher classes of crops, such as gardens, rice and groundnut. The receipts from plantations again show some improvement, but the total under other receipts is practically the same as in the previous year.

8. The total revenue realised was Rs. 4,60,813, and the outstandings at the end of 1890-91 amounted to Rs. 34,330 as compared with Rs. 40,550 at the commencement of the year.

9. The working expenses during the year amounted to Rs. 2,39,615 as compared with Rs. 2,47,126 in the previous year, showing a decrease of Rs. 7,511, which was principally in the charge for repairs, and is satisfactory.

10. The net revenue of the year was

(1) on basis of assessments Rs. 2,04,666

(2) on basis of realisations „ 2,21,198

as compared with Rs. 2,02,712 and Rs. 1,75,733, respectively, in 1889-90.

11. The Nira Canal and Mhaswad Tank show a profit of Rs. 12,304 as compared with Rs. 6,320 in the previous year.

12. The Productive Works show a profit of Rs. 1,73,955 as compared with Rs. 1,45,088 in 1889-90. The state of the canals leading from the Ekruk Tank is receiving consideration.

13. The Minor Works, taken all together but excluding Gokak, show a profit of Rs. 28,955 as compared with a profit in 1889-90 of Rs. 18,103 and with a loss in 1888-89 of Rs. 13,499, but some of the works, and notably the Jamda Canals, still show disappointing direct results. But little direct use was made of the large volume of water stored in the Ashti Tank. On the Gokak works there was a profit of Rs. 5,984: the completion of the Storage Works improved the rabi supply to the canal, but the improvement in receipts due to this cause will not appear until the accounts for 1891-92 are ready.

14. A somewhat fuller account is given in Part II. of the report relating to Works for which only Revenue Accounts are kept and Agricultural Works. The figures of area irrigated, revenue and expenditure correspond closely with those of the previous year and call for no special comment, pending a decision on the question, which is still under consideration, of increased effort to systematically maintain and improve the efficiency of the works.

15. Copies of the report and of this review should be forwarded to the Government of India and Secretary of State.

C. T. BURKE,

Under Secretary to Government.

To

The Financial Department, Secretariat.

The Revenue Department, Secretariat.

The Commissioner N. D.

The Commissioner C. D.

The Commissioner S. D.

The Survey and Settlement Commissioner.

The Director of Land Records and Agriculture

The Chief Engineer C. D.

The Chief Engineer N. D.

The Superintending Engineer S. D.

• The Superintending Engineer in Sind.

The Examiner of Public Works Accounts.

The Government of India.

The Secretary of State for India. } By letter.

The Editors' Table.

} With copies of the report.

Exd. R. B. P.

No. of 1892.

Copy forwarded for information and guidance to

Engineer

Division.

IRRIGATION REVENUE REPORT

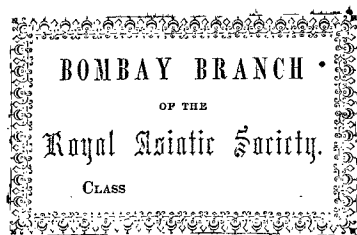
OF THE

BOMBAY PRESIDENCY,

EXCLUDING SIND,

1891-92.

PARTS I & II.



IRRIGATION REVENUE REPORT

OF THE

BOMBAY PRESIDENCY,

EXCLUDING SIND,

1891-92.

PARTS I & II.



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IRRIGATION REVENUE REPORT, BOMBAY PRESIDENCY (EXCLUDING SIND).

1891-92.

PART I. COMPRISING WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

The following list includes all the works in operation, 36 in number :—

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MAJOR WORKS.			
<i>Protective Works.</i>			
Pooha	1	Nira Canal	Storage lake at Bhátghan under construction, but affords storage to the extent of over 3,500 millions cubic feet, the designed capacity being 5,500 millions.
Sholápur... ..	2	Mhasvad Tank	Completed except a part of the waste weir which requires raising.
<i>Productive Works.</i>			
Ahmedabad	5	Háthmati Canal	Survey for storage undertaken.
Khándesh	6	Lower Pánjhra River Works	Storage tank at Mukti complete.
Násik	7	{ Kádva { Pálkhed Canal... River { Ojhar Támbat Works. { Canal. { Wadáli Canal.	Wághad Tank completed with the exception of the waste weir. Small portions of the earthen dam also require raising.
Ahmednagar	8	Pravara River Works—Lákh Canal.	Maládevi Tank proposed for this work, but sanction withdrawn pending enquiry into modified proposals for the dam, and alternative proposals for a tank at Samrád.
Poona	9	Mutha Canals	Lake Fife at Khadakvásla complete.
Sholápur... ..	10	Ekrúk Tank	Complete.
Sátára	11	Krishna Canal	Site for a storage reservoir is under consideration.
MINOR WORKS AND NAVIGATION.			
Ahmedabad	12	Khári Cut	The Bokh project under revision.
Khándesh	13	Hartála Tank... ..	Complete.
	14	Mhasva do.	Do.
	15	Jámda Canals	Reservoir at Chankápur sanctioned and commenced, but work suspended for want of funds.
	16	Pársul Tank	Complete.
Ahmednagar	17	Pravara River Works—Ojhar Canal.	Vide remark against (8). Lákh Canal.
	18	Bhátodi Tank... ..	Complete.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MINOR WORKS AND NAVIGATION—continued.			
Poona ...	19	Mátoba Tank ...	Complete.
	20	Kásurdi do. ...	Do.
	21	Shirsuphal do. ...	Do.
	22	Bhádálvádi do. ...	Do.
Sholápur ...	23	Koregaon do. ...	Do.
	24	Ashti do. ...	Do.
Sátára ...	25	Revári Canal ...	Storage Tank at Sonkeh proposed.
	26	Upper Mán River Works ...	Pingli Tank complete.
	27	Yerla River Irrigation Works ...	Nehr Tank complete.
	28	Chikhli Canal ...	No storage works yet proposed.
	29	Maini Tank ...	Complete.
Bijápur ...	30	Muchkundi Tank ...	Do.
	31	Nilgund do. ...	Do.
Belgaum ...	32	Gadikeri Tank ...	Do.
Dhárwár ...	33	Dámbal do. ...	Do.
	34	Medleri do. ...	Do.
	35	Madag do. ...	Do.
	36	Asundi do. ...	Do.
	37	Mávinkop do. ...	Do.
Provincial.			
Belgaum ...	39	Gokák Canal, 1st Section ...	Storage works at Dhupdal completed.

Nos. 3 and 4, or Chankápur and Maládevi tanks, are not included, as the works were not in operation; the former has been suspended and the latter has not yet been approved. No. 38—Gokák Canal, 2nd Section,—is in abeyance.

Capital outlay. 2. The total Capital outlay during and up to the end of the year was as follows :—

Main heads.	To end of 1890-91.	During 1891-92.	To end of 1891-92.
A.—Direct Charges.	Rs.	Rs.	Rs.
I.—Works ...	1,90,12,275	1,28,067	1,91,40,342
II.—Establishment ...	43,10,963	64,982	43,75,948
III.—Tools and Plant ...	5,05,838	—6,716	4,99,122
IV.—Suspense ...	.....	.....	.....
Profit and loss ...	.....	.....	.....
Total A. ...	2,38,29,079	1,86,333	2,40,15,412
Deduct—Receipts on Capital Account ...	35,035	—3	35,032
Net Total A.—Direct Charges ...	2,37,94,044	1,86,336	2,39,80,380
B.—Indirect Charges.			
Capitalization ...	3,47,106	2,072	3,49,178
Loss by exchange ...	.....	.....	.....
Leave and pension allowances ...	7,74,186	9,097	7,83,283
Total B.—Indirect Charges ...	11,21,292	11,169	11,32,461
Grand Total A. + B. ...	2,49,15,336	1,97,505	2,51,12,841

3. The following abstract shows the details of the above :—

	Number of Works.	EXPENDITURE, 1891-92.			Total Expenditure, Direct and Indirect, to end of 1891-92.	Amount of sanctioned Estimates.
		Direct.	Indirect.	Total.		
<i>Major Works.</i>		Rs.	Rs.	Rs.	Rs.	Rs.
Protective Works. { In operation	2	1,18,274	6,904	1,25,178	71,62,387	73,26,089
	2	668	31	699	1,02,491	17,42,810
Total ...	4	1,18,942	6,935	1,25,877	72,64,878	90,68,899
Productive Works. { In operation	7	11,348	532	11,880	1,05,58,006	1,06,78,606
Minor Works. { In operation	26	20,929	2,848	23,777	60,63,168	62,93,863
	1	1,346	51	1,397	1,90,284	1,31,995
Total ...	27	22,275	2,899	25,174	62,53,452	64,85,864
Provincial Minor Works. { In operation	1	33,771	803	34,574	*10,36,505	11,41,213
Grand Total ...	39	1,86,336	11,169	1,97,505	2,51,12,841	2,73,74,582

* Including expenditure charged to 33—Construction of Protective Irrigation Works.

The number of works in operation is 36, the same as in the previous year. The Chankápur and Maládevi Tanks and the Gokák Canal, 2nd Section, are still in abeyance. The question of Provincial responsibility in respect of the Chankápur Tank is still under consideration. Rs. 1,97,505 was the total capital outlay during the year, and was incurred principally on the Nira Canal. The expenditure was for the most part on the waste weir of the dam at Bhatghar and to a lesser extent on works in connection with the main canal and distributaries. The irrigable area under command of the Nira Canal at the close of the previous year was 1,35,727 acres. During the year the first 10 miles of distributary No. 59 were opened for irrigation, bringing an additional area of 24,149 acres under command, making the total irrigable area 1,59,876 acres. The storage was increased to above 3,500 millions of cubic feet, the ultimate full capacity being 5,500 millions.

4. The interest account to end of the year stands as follows :—

	AMOUNT.				AMOUNT.		
	Protective Works.	Productive Works.	Total.		Protective Works.	Productive Works.	Total.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Total Interest charges to end of 1890-91...	51,41,612	72,72,896	94,14,008	Net Revenue realized to end of 1890-91...	-53,319	11,08,002	10,46,183
Do. during 1891-92...	3,79,543	4,08,070	6,82,613	Do. during 1891-92...	8,168	2,03,493	2,11,661
				Balance Net Interest Charges to end of 1891-92 ...	-51,651	13,08,445	12,57,794
Total to end of 1891-92 ...	54,21,155	76,75,466	1,00,96,621	Total ...	24,21,155	76,75,466	1,00,96,621

5. The gross revenue realized from all sources during the year under review, after deducting refunds of revenue, (Rs. 703) was Rs. 5,12,072, of which Rs. 4,99,425 were direct and Rs. 12,647 indirect receipts. The net revenue actually realized was Rs. 2,26,179.

The gross revenue shows an increase of Rs. 51,259 and the net revenue an increase of Rs. 4,981.

6. The gross area under command was 916,753 acres, being the same as in the previous year. The net irrigable area was 5,59,911 acres, as compared with 5,35,762 acres in the past year, showing an increase of 24,149 acres, the whole of which was on the Nira Canal.

7. The financial results of the year by main heads were as follows :—

	Areas irrigated.	REVENUE REALIZED.			Working Expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
		Rs.	Rs.	Rs.		
<i>Class I.—Works for which Capital and Revenue Accounts are kept.</i>	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Major Works. { Protective Works ...	37,167	63,706	...	63,706	55,538	8,168
{ Productive Works ...	31,370	3,36,204	7,237	3,43,441	1,39,998	2,03,443
Total ...	68,537	3,99,910	7,237	4,07,147	1,95,536	2,11,611
Minor Works ...	22,537	82,628	5,410	88,038	84,984	3,054
Provincial Minor Works ...	6,000	16,887	...	16,887	5,373	11,514
Total, Class I. ...	97,074	4,99,425	12,647	5,12,072	2,85,893	2,26,179

* Includes 1,049 acres on which consolidated assessment is levied.

The area shown as irrigated includes, as observed in last year's report, an area of 1049 acres on which a consolidated land and water assessment is levied, and which is derived from works on which expenditure on improvements only has been incurred.

8. The figures showing areas irrigated, revenue assessed and realized and working expenses, as compared with former years, are as follows :—

Years	Area irrigated.	REVENUE.		Working Expenses.
		Assessments.	Realizations.	
		Rs.	Rs.	
1882-83 ...	28,735	2,48,714	2,06,174	1,66,870
1883-84 ...	32,962	2,44,247	2,78,130	1,70,089
1884-85 ...	39,655	2,47,702	2,60,080	1,92,612
1885-86 ...	59,450	2,83,232	2,79,877	2,10,686
1886-87 ...	42,628	3,03,475	3,34,468	2,39,417
1887-88 ...	46,187	3,49,512	3,43,445	2,41,385
1888-89 ...	79,195	4,14,153	3,71,545	2,34,312
1889-90 ...	85,550	4,49,838	4,22,859	2,47,126
1890-91 ...	74,852	4,44,281	4,60,813	2,39,615
1891-92 ...	96,025	5,76,586	5,12,072	2,85,893

There was a considerable increase in the total area irrigated as compared with the previous year, also as compared with 1889-90, up to which there had been a steady increase. The figures of assessments, realizations and working expenses show a corresponding increase.

The increase in the area irrigated, 21,173 acres, was distributed over the several classes of works as follows:—

	Acres.
Protective Works	13,148
Productive „	4,805
Minor „	1,068
Do. Provincial	2,152
Total Increase	21,173

Nearly all the works show an increase, which is considerable under Protective Works, and chiefly so on the Nira Canal. The increase is said to be partly due to unfavourable rainfall, and partly to extension of irrigation on some of the works.

The only work that shows a noticeable decrease is the Hathmati Canal. On this canal there was a decrease in area of 1,151 acres, in the rabi season, due to insufficient supply in the river on account of scanty rainfall at the origin of the river.

9. The following table contrasts the distribution of rainfall in each month Distribution of rainfall. for the last five years:—

	I.—Works having an unfailing supply.					II.—Works dependent on local rainfall.				
	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.
<i>Kharif.</i>	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
June	4.38	3.74	2.49	5.54	2.57	3.16	4.03	2.04	4.29	2.58
July	7.18	5.19	4.21	3.32	7.11	5.77	2.76	6.24	2.79	3.88
August	2.65	2.62	1.47	3.08	3.03	3.67	2.20	2.31	3.73	3.15
September	4.81	6.09	9.52	5.00	2.93	6.06	5.42	10.27	4.50	2.78
Total	19.02	17.64	17.69	16.94	15.64	18.68	14.41	20.86	15.61	12.39
<i>Rabi.</i>										
October	3.41	2.49	6.70	3.09	3.25	2.37	1.93	7.03	2.45	3.81
November	4.69	1.55	0.06	2.70	0.26	2.05	3.00	0.12	3.10	0.13
December	0.09	...	...	1.17	...	0.10	0.06	...	1.94	...
January	1.34	...	...	...	...	0.99	0.01	...	0.01	...
Total	9.53	4.04	6.76	6.96	3.51	5.51	5.00	7.15	7.60	4.04
Total Kharif and Rabi.	28.55	21.68	24.45	23.90	19.15	24.19	19.41	28.01	23.11	16.43

The rainfall in the year under report was lighter on all the works except certain works in Ahmedabad and Khándesh Districts which show an increase.

The average in the two seasons, taking all the works together, was 17.59 inches as compared with 22.49 in 1890-91.

10. The total area irrigated was distributed as follows:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1890-91	43,170	31,682	74,852
1891-92	43,905	52,120	96,025

There is a slight increase in the kharif area, but the rabi area shows a considerable increase, 20,438 acres. The differences in areas as compared with those of the previous year have been explained in the review of the annual statement of irrigation and rainfall.

There were no free grants of water during the year.

11. The area irrigated was in excess of the area applied for, the figures being 82,433 and 96,025 acres respectively. The difference between area applied for and area irrigated is chiefly due to the fact that the cultivators generally apply for less than they actually irrigate, probably from ignorance of what the areas of their holdings are.

12. The state of the collections was as follows:—

	Rs.
Balance of demands unrealized at the commencement of the year...	35,265
Demand of the year—	Rs.
Rabi, 1890-91	79,601
Kharif, 1891-92	2,92,559
Miscellaneous receipts	1,47,347
	5,19,507
	<u>5,54,772</u>
Remissions	217
	<u>5,54,555</u>
Amount unrealized at the close of the year	54,427
Actual receipts of the year	5,00,128
Add—	
Share of land revenue	12,647
	<u>5,12,775</u>
Deduct—	
Refunds of revenue	703
Revenue realized as per paras. 5, 7 and 8...	<u>5,12,072</u>

The remissions and refunds together amount to Rs. 920.

There is a considerable increase in the total amount, Rs. 54,427, unrealized at the close of the year; this total is made up of the following:—

	Rs.
Mutha Canals	23,825
Krishna Canal	19,418
Mhasvad Tank	1,685
Ekruk Tank	1,462
Khari Cut	1,450
Parsul Tank	1,446
Other works	5,191
Total Rs. ..	<u>54,427</u>

The outstanding balances on the Mutha and Krishna Canals seem rather heavy, but that on the Mutha Canals, Rs. 18,229, is on account of town water-supply, including Rs. 16,894 for March 1892, which could not be recovered before the end of the official year. The causes of the outstanding balance on the Krishna Canal have not been explained.

13. The total working expenses for the year amounted to Rs. 2,85,893 against Rs. 2,39,615 in the previous year, showing an increase of Rs. 46,278 distributed as follows:—

	1890-91.	1891-92.	Increase.
	Rs.	Rs.	Rs.
Major Works—			
Protective Works	43,211	55,538	12,327
Productive Works	1,32,612	1,39,998	7,386
Total	1,75,823	1,95,536	19,713
Minor Works and Navigation	59,370	84,984	25,614
Provincial Minor Works	4,422	5,373	951
Grand Total	2,39,615	2,85,893	46,278

The total increase of Rs. 46,278 is reduced to Rs. 33,999, if the unusual charge of Rs. 12,279, adjusted against the Revenue Account of the Maini Tank for special repairs on account of damages done by heavy floods of 1889, is left out of consideration. The whole of this increase is on works in the Central Division, and principally on the Nira Canal, Lower Panjhra River Works, Jámda Canals, and the Mutha Canals and other works in the Poona District.

The increase on the Nira Canal is said to be due chiefly to a large expenditure on repairs on account of some breaches in the canal banks and to an increase in length of distributaries. The working expenses on this Canal amounted to Rs. 42,905, which gives a rate of Rs. 447 per mile of main canal (96 miles) in operation, and Rs. 1.49 per acre irrigated, as compared with Rs. 321 and Rs. 1.80 in the previous year. The working expenses also include the maintenance of 119 miles of distributaries.

The increase on the Lower Panjhra River Works is due to the cost of repairs to the Betávad bandhara, the last of the series of channels supplemented by the Mukti Tank. That on the Jámda Canals is also attributed to heavy expenditure on repairs, a considerable amount being also spent on clearance of silt.

As regards the works in the Poona District it is explained that the excess is due to changes in the Engineering establishment and the small outlay on Capital and other works.

The total for the six large works in the Southern Division, viz., Krishna Canal, Upper Mán and Yerla River Works, Maini and Madag Tanks and Gokák Canal, shows a good deal of variation. The conditions of the Gokák Canal are quite exceptional as the canal takes off from the river just above the Falls, and in a length of only $2\frac{1}{2}$ miles of canal attains a command of nearly 17,000 acres of good land. This canal therefore with its short length is comparatively cheaply worked. The Madag Tank waters a compact area in an enclosed valley, and can also be economically worked. The Upper Mán Works on the other hand consist of the isolated Pingli Tank, with a feed channel above and a short canal taken off direct from the tank: an independent weir across the nala with a feed channel from it leading to the Gondoli Canal: another weir on the Mán River and the Gondoli Canal leading off from it: a small channel from the Pingli Nala called the Dahivadi Channel: and again another weir and channel at Lodhowde. The mere statement of these numerous small works combined into one system explains the high cost of working per acre irrigated. The same explanation applies, in a modified degree however, to the Yerla Canals.

14. The following table contrasts the charges under the principal heads with those of the two previous years:—

					1889-90.	1890-91.	1891-92.
					Rs.	Rs.	Rs.
Works ...	...	...	...	...	19	...	11,951
Repairs ...	...	...	...	...	1,33,922	1,27,002	1,37,598
Establishment ...	...	...	...	...	80,111	79,329	98,283
Tools and Plant ...	...	...	...	...	5,124	3,971	3,956
Total in the Public Works Department ...					2,19,176	2,10,302	2,51,790
Collection Charges...	...	...	...	...	16,737	18,206	20,242
Indirect Charges ...	...	...	...	...	11,213	11,107	13,861
Total ...					2,47,126	2,39,615	2,85,893

The above statement shows an increase under all heads except "Tools and Plant"

The percentage of working expenses on gross assessed revenue was 49.5 against 54 in the previous year, and the rate per acre was Rs. 2.97 against Rs. 3.20 in the previous year.

Detail of working.

15. The following table gives the details of the working expenses of some of the principal works :—

Names of Works.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.		WORKING EXPENSES. TOTAL IN THE PUBLIC WORKS DEPARTMENT.	
		Total Cost.	Per Acre.	Per mile of Main Canal.	Per Acre irrigated.
Canals.	Rs.	Rs.	Rs.	Rs.	Rs.
Nira Canal	2.30	1,685	0 0 11	404	1.35
Háthmati Canal	2.47	195	0 1 2	274	2.12
Kálva River Works	3.42	228	0 1 3	317	2.56
Mutha Canals... ..	10.84	1,295	0 1 6	826	5.17
Krishna Canal	7.31	549	0 1 7	255	1.66
Jámda Canals	2.67	21	0 1 1	397	17.75
Pravara River Works—Ojhar Canal ...	2.48	276	0 2 1	233	1.68
Do. Lákha Canal	2.97	56	0 1 9	123	5.56
Yerla River Works	4.21	303	0 2 2	206	2.57
Upper Mán River Works... ..	3.09	109	0 1 3	283	3.57
Tanks.					
Mhasvad Tank	3.07	1,448	0 2 9	358	1.32
Ekrúk Tank	4.18	492	0 2 6	259	3.96
Bhátodi Tank	3.06	36	0 2 6	659	1.88
Mátoba Tank... ..	6.54	92	0 0 9	124	1.05
Shirsuphal Tank	3.58	35	0 0 7	284	3.69
Bhádálvádi Tank	4.68	51	0 0 11	304	3.49
Mhasva Tank... ..	2.69	7	0 0 11	159	9.18

During the year under report the cost of measurement was high in the case of the Mhasvad Tank. The rate on the Ekrúk Tank shows a reduction compared with last year, but is still high, as is also that on the Bhatodi Tank.

16. The indirect receipts as shown in Statements I—C, IV—C and II—E were Rs. 12,647. If Rs. 20,484 on account of savings to the Military and other Government departments, *i. e.*, the difference between the amount formerly charged to them for water-supply and the amount paid during the year under report to the Irrigation Department, be added to this, the indirect receipts amount to Rs. 33,131, and the total assessments of the year to Rs. 5,97,070, as compared with Rs. 4,67,135 in the previous year. Also if Rs. 5,711 *plus* Rs. 41,328 on account of supply to the Poona City=Rs. 47,039, being the difference between the value of water issued from the Mutha Canals at normal rates and the value of water supplied at special reduced rates or gratuitously, be taken credit for in the revenue returns of the work as a book credit, and be added to the above amount, the earnings will be Rs. 6,44,109.

A statement showing the details of the sum of Rs. 20,484 above referred to is attached to the report on the Mutha Canals, as desired by the Government of India.

The Government of India have now rescinded their orders of 1876 and 1884 with regard to the entry of the above item in the Administrative Accounts of the work as a foot-note. These orders are to have effect from 1st April 1893, and it will be unnecessary to attach a similar statement to the report for the year 1893-94. The outlay on maintenance of tanks and wells in the Poona Cantonment during 1891-92 was Rs. 2,229. The question of transfer of tanks and wells to the Military Department is under consideration.

The subject of the charge made to the City Municipality of Poona for water has been considered by this Government, and the Government of India have been addressed in this Government letter No. 76 W. I.—791, dated 17th May 1892.

17. The net assessed revenue of the year, after deducting working expenses including indirect and all other charges, and neglecting the items, amounting to Rs. 67,523, referred to in the preceding paragraph, was Rs. 2,90,693, as compared with Rs. 2,04,666 in 1890-91.

The details of the assessments were as follows:—

	DIRECT REVENUE.			Indirect Revenue.	Total.
	Water-rates.	Other Receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Major Works—					
Protective works	91,847	2,585	94,432	...	94,432
Productive works	2,32,495	1,29,245	3,61,740	7,237	3,68,977
Total	3,24,342	1,31,830	4,56,172	7,237	4,63,409
Minor works	80,809	7,641	88,450	5,410	93,860
Provincial Minor works	11,441	7,876	19,317	...	19,317
Grand Total	4,16,592	1,47,347	5,63,939	12,647	5,76,586

18. The water-rates in force during the year are shown in Statement I—F and were the same as in the previous year except on the Mhasvad Tank. On this work revised rates were sanctioned for the period extending from 1st April 1891 to 15th January 1896.

19. The average water-rates per acre of land actually irrigated were:—

	1890-91.	1891-92.
Protective Works	2-07	2-47
Productive Works	6-73	7-41
Minor Works	3-47	3-76
Provincial Minor Works	1-87	1-91
Average of all taken together...	4-09	4-33

The average rate was higher than in the previous year owing to increases in the higher classes of crops, such as sugarcane ground-nut, &c.

20. The water-rate assessments and other receipts compare with those of the previous year as under:—

	1890-91. Rs.	1891-92. Rs.
Water-rates	3,06,695	4,16,592
Other receipts—		
Plantations	16,837	17,761
Water-power	7,050	11,310
Water-supply to towns	89,357	1,04,420
Miscellaneous	12,917	13,856
	1,26,161	1,47,347
Share of land revenue	11,425	12,647
	1,37,586	1,59,994
	4,44,281	5,76,586

All the items show an increase. That under 'Water-rates' is due to the increase in the area irrigated. The increase under 'Water-supply to Towns' occurs chiefly on the Mutha Canals and is on account of larger supply having been taken for several houses in the Cantonment and by the Municipality. The increase under 'Plantations' is mainly on the Jamda Canals and the Ashti Tank.

21. The principal crop acreages irrigated during 1890-91 and 1891-92 were as follows :—

	1890-91.	1891-92.	Increase or Decrease.
	Acres.	Acres.	Acres.
Gardens and orchards ...	3,105	3,083	—22
Sugarcane ...	6,769	9,694	+ 2,925
Wheat ...	10,343	10,264	—79
Rice ...	4,809	5,003	+ 194
Maize ...	2,457	2,468	+ 11
Jowár ...	11,417	29,095	+17,678
Báji ...	10,954	8,415	—2,539
Gram, &c. ...	5,332	7,171	+ 1,839
Ground-nut... ..	10,527	11,973	+ 1,446
Condiments... ..	2,673	3,190	+ 517
Fodder ...	1,814	1,089	—725

Of these the chief crops were :—

	Acres.
Sugarcane	9,694
Wheat	10,264
Jowár	29,095
Báji	8,415
Gram, &c.	7,171
Ground-nut	11,973

As compared with the previous year there has been an increase under all these crops except wheat and báji.

The total estimated value of crops irrigated is shown as Rs. 54,44,456 against Rs. 39,97,695 for the previous year.

There was thus a considerable increase in the estimated value, the area under crops being larger than in the previous year.

22. In Statement I—E the duty of water on each work, as well as the basis to which the duties were calculated, &c., are shown.

Duty of water. The results vary very much on the different works; but this is to be expected, as the conditions also vary considerably, and in most of the canals it is necessary to maintain a much larger discharge than is necessary for the area under irrigation owing to the bulk of the land irrigated being frequently situated at the tail of the canal at a long distance from the head works.

Details of the duty obtained on each canal are given in the body of the report and are generally estimated from the daily discharge observations and the known area of the miscellaneous crops under irrigation during the period; the principal results are as follows :—

DUTY IN ACRES PER CUBIC FOOT PER SECOND.						
			Maximum.	In month of	Minimum.	In month of
Mutha Canals...	...	...	93·3	February.	44·69	May.
Mátoba Tank ...	...	...	345·21	January.	63·84	Do.
Shirsuphal Tank ...	...	...	264·94	Do.	72·92	April.
Bhádálvádi Tank ...	...	...	175·51	Do.	75·37	May.
Krishna Canal ...	...	...	65·	September.	30·	Do.
Revári Canal ...	...	...	200·	January.	41·	April.
Upper Mán River Works...	...	...	80·	February.	19·	March.
Yerla River Works	...	...	80·	April.	...	.....
Chikhli Canal...	...	...	76·	October.	4·	March.
Maini Tank ...	...	...	245·	Do.	34·	Do.

Special experiments to determine the duty of water per acre were carried out during the year with the following results :—

Ekrak Tank, Sholapur District—

		C. ft.	
Pánsál rice during hot weather	...	...	153,910 per acre.
Do. rainy season	...	...	81,378 "
Sugarcane	...	...	403,956 "
Ground-nut	...	...	21,521 "

Mhasvad Tank, Sholapur District—

Wheat, (Jod)	...	...	60,700 "
Do. No. 2 plot	...	...	55,399 "
Sweet potatoes	...	...	118,084 "

Mukti Tank, Lower Pánjhra River Works, Khándesh—

Wheat	...	...	46,825 "
Peas	...	...	25,632 "

Kádva River System, Násik District—

Pákhed...	...	} Canals.	
Vadáli	...		
Ojhat Tambát	...		Ground-nut varied from 36,067 to 41,899 per acre.

On the Ashti and Koregaon Tanks, Sholapur District, the result of gauge operations to determine the duty of a cubic foot of water per second was as under :—

		<i>Perennial Crops.</i>			
		Sugarcane.	Plantain.		
		101	77		
		<i>Eight-monthly.</i>			
Ashti Tank ...	Ground-nut.	Chilly.	} Acres per cubic foot		
	175	204		per second.	
		<i>Four months' Crops.</i>			
		Inferior rice.	Wheat, (Jod)		
		147	127		
Koregaon Tank.	<i>Eight months' Crops.</i>		} Acres per cubic foot		
	Ground-nut...	130			
	<i>Four months' Crops.</i>				
		Inferior rice	115		

24. The Muchkundi Tank made a good start during the year under report and for the first time paid its working expenses. The bed of the tank is becoming more and more staunch every year, and there seems but little doubt that the tank will fill in a few years hence. If the difficulty connected with the tenure of the land can be overcome, there is some promise of this tank being an useful little work. Hitherto the Desai, who is the proprietor of the land below the tank, could not himself make use of the water, and his tenants would not do so for fear of their rents being raised; but the experience of the year under report gives some hope that an understanding will at last be arrived at.

The Nilgund Tank in Bijapur continues to yield no revenue. Orders have been issued on the subject of this tank in Government Resolution No. 137 W.I.—1592, dated 8th October 1892. It has been decided for the present to allow this work to remain on the list of Works for which Capital and Revenue Accounts are kept.

An enquiry has been made as to the desirability and feasibility of drainage of the lands below the Asundi Tank which have suffered from 'reh' (efflorescence), and an estimate for drainage channels has been submitted.

PART II.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

25. The reports submitted this year contain a full account of the old works in the several districts and the steps taken to maintain, repair and improve them. The neglect of duty on the part of the cultivators in the matter of silt clearance and petty maintenance of the channels which devolve on them, and the helplessness of the Revenue authorities and the officers of the Irrigation

Department in compelling the people to do what is needful without some legal powers have been brought to the notice of Government and are still receiving consideration.

26. The following shows a comparison of the figures for the year under report with those for 1890-91:—

	1890-91.	1891-92.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Area irrigated	145,563	145,597	34	...
	Rs.	Rs.	Rs.	Rs.
Revenue receipts	5,27,369	5,27,067	598	...
Expenditure	1,96,256	1,69,648	...	26,608
Net revenue	3,31,113	3,58,319	27,206	...

The area irrigated shows an increase of 34 acres. The receipts show an increase of Rs. 598.

27. The following gives some details of expenditure:—

	EXPENDITURE.		COMPARISON.	
	1890-91.	1891-92.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Extensions and Improvements ...	13,806	23,089	9,283	...
Maintenance and Repairs ...	39,445	28,886	...	10,559
Establishment... ..	85,383	64,123	...	21,260
Tools and Plant	4,955	869	...	4,086
Total ...	1,43,589	1,16,967	...	26,622
Share of Collection charges ...	52,667	52,681	14	...
Total ...	1,96,256	1,69,648	...	26,608

The above shows a considerable decrease under Establishment charges, which is satisfactory.

Statement of Canals in the Bombay Presidency, including Sind.

Source of Supply of Water.	(7) KADWA RIVER WORKS.							(11) SIND CANAL.	(12) HADIMATI CANAL.	(13) PACHORI CANAL.	(14) QADWA-TAMAR CANAL.	(15) WADIA CANAL.	(16) LAKE CANAL.	(17) KUBHRA CANAL.	(18) KADWA OUT.	(19) JAMRA CANAL.	(20) OZAR CANAL.	(21) RIVER WARRA AND RAHULI.	(22) CHINHA CANAL.	(23) GOKTE CANAL.
	Reservoir at Bhadigar.	Kidwa River.	Banganga River.	Kidwa River.	Kidwa River.	Kidwa River.	Kidwa River.	River Nira and Reservoir at Bhadigar.	Hadimati River.	Kidwa River.	Banganga River.	Kidwa River.	Kidwa River.	River Krishna and Rahuli.	Kidwa River.	Girra River.	Pravara River.	River Warrar and Rahuli.	River Nandini and Rahuli.	River Ghata and prabha and Sanga Forts.
Minimum discharge } C. ft. per second.	{ K. 1,318 R. 408 H.W. 5	{ K. 27.01 R. 11 H.W. 4	{ K. 0.47 R. 0.21 H.W. 0.00	{ K. 7.10 R. 3.09 H.W. 2.35	{ K. 99.29 R. 4.75 H.W. 0.00	{ K. 249.56 R. 84.83 H.W. 30.85	{ K. 4 R. 10 H.W. 0	{ K. 57.30 R. 19.15 H.W. 4.99	{ K. 105.32 R. 19.15 H.W. 4.99	{ K. 19.07 R. 8.54 H.W. 2.54	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23	{ K. 18.70 R. 0.00 H.W. 0.23
Maximum discharge } of canal.	456	101	30.53	4.02	12.18	36.24	94.55	150	150	150	150	150	150	150	150	150	150	150	150	150
Average annual rainfall... ..Inches.	21.24	29.72	19.28	19.28	19.28	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46	24.46
Gross area commanded Acres.	307,559	44,744	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832	28,832
Culturable do.	274,447	26,840	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280	26,280
Area irrigable by complete project	227,670	11,336	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466	23,466
Do. at present	159,876	8,000	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857	9,857
Sanctioned Estimate—																				
Direct charges Rs.	48,79,880	5,89,706	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087	2,38,087
Indirect charges	9,18,435	30,000	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761	15,761
Interest during construction	11,72,734	2,37,687	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554	2,12,554
Total Estimate Rs.	63,70,049	8,57,392	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402	4,66,402
Expenditure { Direct charges Rs.	49,76,765	4,00,925	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348	2,19,348
to end of	1,90,985	27,470	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330	15,330
Interest during	15,40,796	3,74,839	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494	1,74,494
1890-91. { construction	60,98,546	8,98,234	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102
Total Expenditure Rs.	60,98,546	8,98,234	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102	4,06,102
Works as now sanctioned—																				
Main Canals, Irrigation Miles.	100	1,210	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Branch Canals, do.	132	2,447	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Distributaries, do.	132	2,447	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Of above—																				
Navigable channels	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Works completed at end of 1891-92—																				
Main Canals, Irrigation Miles.	96	1,194	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Branch Canals, do.	132	2,447	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Distributaries, do.	132	2,447	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Of above—																				
Navigable channels	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement of Reservoir Projects in the

Source of Supply.		(1)	(2)	(3)	(7)	(9)	(10)	(13)	(14)	(16)	(18)	(19)	(20)
		Dhātighar Reservoir, Nira Canal.	Mhasvad Tank.	Lower Pānjhā River Works and Mukti Tank.	Kādva River Works (Wāghad Tank).	Mutha Reservoir, Lake Fife.	Ekrik Tank.	Hartala Tank.	Mhasva Tank.	Parsul Tank.	Bhāloti Tank.	Mātoha Tank.	Kāsurdi Tank.
		Velvandi River and Ghāt Catchment.	Mān River and Rainfall.	Local Streams.	Kolvan River.	Mutha River and Rainfall.	Adhela River and Rainfall.	Local Streams.	Local Streams.	Parsul River.	Mehekri River.	Nāla, Rainfall and surplus water from Mutha Right Bank Canal.	Kāsurdi Nāla and Rainfall.
If supplied by rainfall.	Area of catchment, Sq. miles..	128	460	34.2	29	196.00	159	6.60	13.40	17.93	44.0	10.00	6.00
	Average annual rainfall .. Inches ..	145	25.47	23.11	61.63	32.63	31.87	24.27	29.52	20.43	24.99	18.89	19.79
Contents of tanks between levels of surface of full supply and sill of canal head sluice		5,800	2,633	342.3	606	(1)2,679.65 (2)3,283.30	3,310	13.49	158.5	118.70	164	229	14.5
Area of surface at full supply		3,584	4013.80	569.00	773	(23)3,639.78 (1)3,295.24	4,640	473	421	161	315.13	477.46	37.92
Gross area commanded		128,045	13,117	(a) ..	94,687	17,152	584	4,647	2,593	15,126	10,700	597	
Culturable do.		105,214	12,627	(a) ..	49,800	16,941	527	4,075	2,386	13,857	7,133	478	
Area irrigable by complete project		106,214	12,627	(a) ..	55,000	15,320	415	4,075	2,386	13,124	7,133	478	
Do. at present		106,214	12,627	(a) ..	49,800	15,330	415	2,993	97	12,124	7,133	478	
Wells Supplied by tanks		12	..	..	..	22	..	..	..	..	..	..	..
Sanctioned Estimate—													
Direct Charges		(a)	20,24,327	4,44,436	4,67,602	60,63,235	12,38,243	48,800	1,29,813	3,06,688	3,61,767	1,93,090	40,812
Indirect Charges		(a)	1,03,947	22,774	16,835	2,40,697	1,06,657	26,150	10,202	7,013	26,511	17,500	4,778
Interest during construction		(a)	6,56,222	3,66,288	217,233	34,30,296	8,00,650	..	..	..	..	..	..
Total Estimate		(a)	27,84,496	8,33,543	7,01,730	97,24,228	21,35,580	75,040	1,40,015	2,13,899	3,78,278	3,10,500	45,590
Expenditure to end of 1891-92.	Direct Charges	(a)	19,74,093	4,37,077	4,37,360	60,79,923	13,36,117	47,948	1,30,701	2,09,468	3,52,685	1,88,148	40,812
	Indirect Charges	(a)	60,544	22,767	11,090	2,27,308	1,05,299	25,484	10,229	6,784	27,029	12,579	4,778
	Interest during construction	(a)	7,81,444	3,66,288	1,44,462	44,00,068	10,77,017	..	..	..	..	..	..
Total Expenditure		(a)	27,66,081	8,26,132	5,94,022	1,07,07,299	24,10,423	73,883	1,40,930	2,09,222	3,79,707	2,00,727	45,590
Works as now sanctioned—													
Dam (earth or masonry)		Masonry ..	Earth.	Earth.	Earth.	Masonry.	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.
Total, Height		(b)127(c)108	79.79	65	85	97.84	76	51½	44	63½	50	48.41	16.00
Canals		M. ft.	27 3,869	..	(f) ..	88	48	..	..	..	4½	..	..
Distributaries		(g)66½	45	(f) ..	76	..	5.5	7	..	5½	17	1.75	
Works completed at end of 1891-92—													
Dam (height) completed		(d) ..	79.79	65	93	97.84	76	51½	44	63½	50	48.41	16.00
Canals		M. ft.	27 3,869	..	(f) ..	88	48	..	..	..	4½	..	..
Distributaries		(g)66½	45	(f) ..	67	..	5.5	7	..	5½	17	1.75	

(1) 244.7 is the reduced level
(2) 248.7 is the height to which

A.

Bombay Presidency, excluding Sind.

(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	REMARKS.
Shireen- vali Tank.	Bhadal- vali Tank.	Koregaon Tank.	Ashti Tank.	Upper Man River Works (Pangli Tank).	Yerla River Irriga- tion Works (Vair Tank).	Mini Tank.	Much- kundi Tank.	Gall- keri Tank.	Dambal Tank.	Medleri Tank.	Madag Tank.	Asundi Tank.	Marinkop Tank.	Gokak Canal, 1st Section, and Storage Works.				
Minor tributary of the Bhima River and Rain- fall.	Minor tributary of the Bhima River and Rain- fall.	Nda and Rainfall.	Ashti Nala and Rainfall.	Man River and Rain- fall.	Yerla River and Rain- fall.	Wanga Nala and Rain- fall.	Much- kundi Nala and Rain- fall.	Rain- fall.	Rain- fall.	Medleri Nala and Rain- fall.	Kumud- wadi River and Rainfall.	Rain- fall.	Rainfall.	Ghat- praha River.				
23°00	23°00	4°4	82	20°00	59°5	54°00	28	68	43	11	540	28	6°25	1,080				
20°21	23°03	34°31	28°92	19°04	28°54	22°33	21°06	28°38	19°24	22°36	29°53	22°26	39°01	56°00				
355	222	81	1,410	105°240	439°77	188°590	680	27°5	113°664	57°600	54°530	106°500	45°75	701°597				
333°79	335°18	202	2,677	349°4	678°9	380°4	1,069	128	443	189	582	418	170°5	2,273°45				
4,500	3,000		17,882	8,443	11,234	4,578	5,570	687	4,505	1,914	2,255	1,800	687	18,868				
2,500	2,400	Not known.	16,825	7,622	10,688	4,525	5,417	Not known.	4,623	1,052	1,730	1,600	Not known.	17,827				
2,500	2,400		14,476	7,623	10,689	4,625	3,417	450	4,505	1,916	Project not com- pleted.	1,800	665	16,663				
2,500	2,400		14,476	7,623	10,689	4,625	3,417	237	4,525	1,052	1,730	1,800	477	16,663				
..	..	..	..	25	18	13	NH.	None.	Un- certain.	NH.	NH.	NH.	NH.	None.				
1,91,088	2,14,382	40,731	7,64,240	4,16,341	6,25,539	3,68,000	1,48,200	8,898	61,162	78,287	2,38,263	67,731	27,389	(a) ...				
11,725	14,842	1,313	77,499	38,180	46,296	22,492	17,322	850	3,744	3,468	17,144	12,754	3,928	(a) ...				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	(a) ...				
2,02,763	2,28,724	42,049	8,31,740	4,44,531	6,71,465	3,90,492	1,65,522	8,238	64,906	81,705	2,49,407	80,485	31,817	(a) ...				
1,94,101	2,13,106	87,023	7,50,720	4,07,413	6,14,783	3,67,671	1,40,217	8,915	60,847	78,354	1,61,248	60,741	27,612	(a) ...				
11,847	14,132	1,266	75,527	22,141	42,878	22,238	15,332	364	3,026	2,795	6,850	1,718	3,235	(a) ...				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	(a) ...				
2,06,008	2,27,228	39,189	8,36,247	4,39,554	6,57,163	3,89,910	1,55,549	9,279	63,873	81,140	1,67,598	62,459	30,847	(a) ...				
Earth.	Earth.	2 dams, 1 earth and the other masonry.	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.	Earth.	Earth.	Earth.	Earth.	Masonry				
54°32	55°09	71 and 16	57°75	53°50	74	57°33	69	20	42°26	25°62	100	33°95	30°53	25' high, ma- ximum a bove el- e v a t i o n 28' at work.				
..	..	38	29	17	28	45	91	51	NH.	..	..	9	..	(b) Above lowest founda- tion.				
12°5	9°75	..	..	63	4	7	46	21	2	54	..	51	Irrigator's Channel.	(c) Above lowest point in river-bed.				
54°32	55°09	71 and 16	57°75	53°50	74	57°33	69	20	42°26	25°62	100	33°95	30°53	(d) The main dam com- pleted to full height; the waste weir up to crest level, and most of the arching complete.				
..	..	33	(A) 29	17	28	45	91	51	NH.	..	..	9	..	(e) Contains 32½ miles of branch.				
12°5	9°75	..	..	63	4	7	46	21	2	54	..	51	Irrigator's Channel.	(f) Contains 6 miles of branch canals and 2 miles of distributary opened this year.				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	2½ miles and Vaderhasti branch 12 miles.				
12°5	9°75	..	..	63	4	7	46	21	2	54	..	51	Irrigator's Channel.	26°31				

of the finished crest of weir.
water is annually impounded at end of monsoon by fixing standards and boards on waste weir crest.

Capital Account of Irrigation Works in Deccan

Name of Work.	DURING YEAR.									
	Direct Charges.						Indirect Charges.			Grand Total.
	Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalisation.	Leave and Pension Allowances.	Total.	
1	2	3	4	5	6	7	8	9	10	11
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
IMPERIAL.										
MAJOR WORKS.										
PROTECTIVE WORKS.										
<i>In Operation.</i>										
1. Nira Canal	73,128	49,064	-3,750	1,18,442	...	1,18,442	...	6,869	6,869	1,25,311
2. Mhasvad Tank	510	247	-925	-168	...	-168	...	35	35	-133
Total ...	73,638	49,311	-4,675	1,18,274	...	1,18,274	...	6,904	6,904	1,25,178
<i>In Abeyance.</i>										
3. Chankapur Tank	449	219	...	668	...	668	...	31	31	699
4. Maladevi do.	...	...	...	...	...	...	...	...	...	...
Total ...	449	219	...	668	...	668	...	31	31	699
Total, Protective Works ...	74,087	49,530	-4,675	1,18,942	...	1,18,942	...	6,935	6,935	1,25,877
PRODUCTIVE WORKS.										
<i>In Operation.</i>										
5. Hathmati Canal	...	...	...	...	...	...	108	...	108	108
6. Lower Pānjhāra River Works ...	2,429	1,175	...	3,604	...	3,604	...	164	164	3,768
7. Kādva River Works	546	254	397	1,197	...	1,197	...	86	86	1,283
8. Pravara River Works—Lākh Canal ...	150	73	-1	222	...	222	...	10	10	232
9. Mutha Canals	65	29	...	94	...	94	...	4	4	98
10. Ekruk Tank	...	...	...	...	...	...	...	...	...	...
11. Krishna Canal	4,732	1,499	...	6,231	...	6,231	...	210	210	6,441
Total, Productive Works ...	7,922	3,030	396	11,348	...	11,348	108	424	532	11,880
Total, Major Works ...	82,009	52,560	-4,279	1,30,290	...	1,30,290	108	7,359	7,467	1,37,757
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
12. Khāri Cut	132	348	...	480	...	480	1,020	49	1,069	1,549
13. Hartāla Tank	...	...	...	...	...	...	...	...	...	...
14. Mhasva do.	...	...	...	...	...	...	...	...	...	...
15. Jamtha Canals	5,853	2,835	...	8,688	...	8,688	17	397	414	9,102
16. Parsul Tank	...	551	808	2,221	...	2,221	...	77	77	2,298
17. Pravara River Works—Ojhar Canal ...	447	217	-1	663	...	663	...	30	30	693
18. Bhatodi Tank	178	87	-1	264	...	264	...	12	12	276
19. Matoba do.	2	...	...	2	...	2	...	...	...	2
20. Kāsuri do.	...	...	...	...	...	...	...	...	...	...
21. Shirsuphal do.	309	165	...	474	...	474	...	23	23	497
22. Bhādalvādi do.	...	...	...	...	...	...	...	...	...	...
23. Koregaon do.	...	...	...	...	...	...	...	...	...	...
24. Ashti do.	2,114	1,024	32	3,170	...	3,170	...	143	143	3,313
25. Rewari Canal	142	52	10	204	...	204	...	7	7	211
26. Upper Main River Works	880	262	18	1,160	...	1,160	...	37	37	1,197
27. Xerla River Irrigation Works	4,104	1,801	201	5,606	...	5,606	...	182	182	5,788
28. Chitthli Canal	...	...	...	...	...	...	...	...	...	...
29. Maini Tank	-1,536	-518	101	-1,953	...	-1,953	...	-73	-73	-2,026
30. Muchkundi do.	...	...	...	...	...	...	...	...	...	...
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	...	...	...	...	...	...
33. Dambal do.	...	...	...	...	...	...	927	...	927	927
34. Medleri do.	...	...	...	...	...	...	...	...	...	...
35. Ma'alag do.	...	...	...	...	...	...	...	...	...	...
36. Asundi do.	...	...	...	...	...	...	...	...	...	...
37. Mayinkop do.	...	...	...	...	...	...	...	...	...	...
Total ...	13,437	6,324	1,168	20,929	...	20,929	1,964	884	2,848	23,777
<i>In Abeyance.</i>										
38. Gokāk Canal, 2nd Section	985	361	...	1,346	...	1,346	...	51	51	1,397
Total, Minor Works and Navigation ...	14,422	6,685	1,168	22,275	...	22,275	1,964	935	2,899	25,174
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
39. Gokāk Canal, 1st Section and Storage Works	31,636	5,737	-3,695	33,768	-3	33,771	...	803	803	34,574
GRAND TOTAL ...	1,28,067	64,982	-6,716	1,86,333	-3	1,86,336	2,972	9,097	11,169	1,97,605

* Including expenditure charged to 35

B.

and Gujarát for and to end of 1891-92.

To end of Year.									
Direct Charges						Indirect Charges.			Grand Total.
Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
12	13	14	15	16	17	18	19	20	21
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
39,00,906 15,72,315	9,55,095 3,40,468	1,28,715 62,783	49,84,716 19,75,566	7,951 1,473	49,76,765 19,74,093	 7,749	1,50,985 62,795	1,50,985 60,544	51,27,750 20,34,637
54,73,221	12,95,563	1,91,498	69,60,282	9,424	69,50,858	7,749	2,03,780	2,11,529	71,62,387
38,210 20,967	17,687 11,600	7,261 1,456	65,338 34,023	106 68	63,232 33,955	..... .....	3,143 2,161	3,143 2,161	66,375 36,116
59,177	29,467	8,717	97,361	174	97,187	.....	5,304	5,304	1,02,491
53,32,398	13,26,030	2,00,215	70,57,643	9,598	70,48,045	7,749	2,09,084	2,16,833	72,64,878
3,83,636 3,60,493 5,36,159 2,66,079 50,56,713 10,07,089 6,60,941	99,517 73,893 1,38,599 68,774 9,23,928 2,15,509 1,39,464	9,060 3,228 16,960 19,480 1,17,433 9,713 1,683	4,92,213 4,37,114 4,91,718 3,52,933 60,92,094 12,39,311 8,02,087	1,288 37 140 201 12,169 1,194 ...	4,90,923 4,37,077 6,91,578 3,52,732 60,79,925 12,25,117 8,02,087	7,640 8,432 4,316 5,824 52,087 65,968 17,222	19,830 14,335 24,288 18,640 1,75,216 1,05,389 27,446	27,470 22,767 28,604 19,464 2,27,303 1,33,406 4,466	5,18,395 4,59,844 7,20,182 3,72,196 63,07,228 18,33,406 8,46,755
82,68,710	16,56,184	1,77,576	1,00,97,470	15,029	1,00,82,441	1,58,489	3,17,076	4,75,565	1,05,58,006
1,37,90,108	29,81,214	3,77,791	1,71,53,113	24,627	1,71,30,486	1,66,238	5,26,160	6,92,398	1,78,22,884
1,28,902 33,437 1,02,795 7,83,259 1,52,577 2,28,420 2,73,898 1,49,237 31,433 1,56,134 1,56,992 30,044 6,03,939 46,429 3,07,418 5,04,604 39,964 2,65,643 1,11,830 6,895 7,020 49,262 61,881 1,26,596 48,805 21,665	31,660 11,986 26,783 1,91,215 40,266 74,824 70,183 35,982 8,495 35,166 53,493 7,661 1,44,051 9,595 93,454 1,05,373 13,611 98,353 26,360 1,690 1,755 10,769 15,324 31,841 10,881 6,762	2,133 2,579 1,129 12,729 9,723 4,535 9,354 2,937 884 2,861 2,621 218 8,122 21 6,782 7,173 208 3,315 2,294 129 140 878 1,155 2,825 1,055 323	1,62,785 47,952 1,30,707 9,87,203 2,02,566 3,07,809 3,53,375 1,88,156 40,812 1,94,161 2,13,106 37,923 7,56,112 56,045 4,07,554 6,17,150 53,803 3,68,211 1,40,484 8,714 8,915 60,909 78,360 1,61,262 60,741 27,550	181 4 6 21 68 144 690 8 5,392 ... 241 2,365 ... 540 267 62 6 14 ... 138	1,62,604 47,948 1,30,701 9,87,182 2,02,498 3,07,665 3,52,083 1,88,148 40,812 1,94,161 2,13,106 37,923 7,50,720 56,045 4,07,413 6,14,785 53,503 3,67,671 1,40,217 8,714 8,915 60,847 78,354 1,61,248 60,741 27,612	6,350 23,052 5,026 14,535 1,078 5,066 13,023 5,579 3,079 5,038 3,882 48,941 1,066 4,787 22,368 917 3,074 11,228 2,083	5,541 2,382 5,208 37,809 5,656 14,782 18,999 7,000 1,699 6,809 10,240 1,266 26,586 1,768 17,854 20,010 2,722 19,165 4,104 253 351 2,099 2,795 6,350 1,718 1,152	11,891 28,434 10,229 62,344 6,734 26,568 3,79,707 12,579 4,778 11,847 14,122 1,266 75,527 2,834 22,141 42,378 3,630 29,239 15,332 258 364 3,026 2,795 6,350 1,718 3,235	1,74,495 73,382 1,40,390 10,39,526 2,00,232 3,23,233 3,79,707 2,00,727 45,590 2,06,008 2,27,228 39,189 8,26,247 58,879 4,29,534 6,57,163 37,442 3,89,910 1,55,549 8,972 8,979 63,573 81,149 1,67,568 62,456 30,847
44,30,029	11,56,513	86,123	56,72,665	10,147	56,62,518	1,81,852	2,18,798	4,00,650	60,63,168
92,036	70,024	14,246	1,76,306	...	1,76,306	740	13,238	13,978	1,90,284
45,22,065	12,26,587	1,00,369	58,48,971	10,147	58,38,824	1,82,592	2,32,036	4,14,628	62,53,462
8,22,169	1,68,197	20,962	10,11,328	258	10,11,070	348	25,087	25,435	*10,36,505
1,91,40,342	43,75,948	4,99,122	2,40,15,412	35,032	2,39,80,380	3,49,178	7,83,283	11,32,461	2,51,12,841

construction of Protective Irrigation Works.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

*Statement showing the Financial Results of Irrigation Works in
Realizations under Main Heads of*

Name of Work.	REVENUE (ACTUAL RECEIPTS).										Revenue	
	Irrigation.			Navigation.	Plantations.	Water-power.	Miscellaneous.	Total.	Refunds of Revenue.	Gross Revenue less Refunds.	Revenue	
	Water-rates directly paid.	Share of Land Revenue.	Total.								Direction.	Executive.
1	2	3	4	5	6	7	8	9	10	11	12	13
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.												
Protective Works.												
1. Nira Canal	42,556	...	42,556	...	412	...	1,518	44,486	1	44,485	412	7,449
2. Mhasvad Tank	18,566	...	18,566	...	94	...	561	19,221	...	19,221	124	2,661
Total	61,122	...	61,122	...	506	...	2,079	63,707	1	63,706	536	10,110
Productive Works.												
5. Hathmati Canal	9,245	...	9,245	...	792	...	148	10,365	...	10,365	12	98
6. Lower Panjhra River Works	10,981	6,643	17,574	...	425	...	23	18,022	9	18,013	109	1,894
7. Kadva River Works	7,573	594	8,167	...	218	...	54	8,439	...	8,439	85	1,877
8. Pravara River Works— Lakh Canal	1,537	...	1,537	...	157	...	7	1,701	...	1,701	31	630
9. Mutha Canals	1,43,817	...	1,43,817	...	1,544	3,600	98,598	2,47,959	633	2,46,926	795	26,063
10. Ekraik Tank	12,271	...	12,271	...	7,038	...	6,784	26,113	...	26,113	140	3,145
11. Krishna Canal	30,177	...	30,177	...	1,365	...	342	31,884	...	31,884	79	1,101
Total	2,15,551	7,237	2,22,788	...	11,739	3,600	1,05,956	3,44,088	642	3,43,441	1,251	34,808
Total, Major Works	2,76,673	7,237	2,83,910	...	12,245	3,600	1,08,035	4,07,790	643	4,07,147	1,787	44,918
MINOR WORKS AND NAVIGATION.												
12. Khari Cut	6,529	...	6,529	...	516	...	130	7,175	...	7,175	31	430
13. Hartala Tank	116	...	116	...	13	...	709	838	49	789	6	236
14. Mhasva do.	450	...	450	...	387	...	77	914	...	914	11	571
15. Vanda Canals	2,725	...	2,725	...	833	...	109	3,687	1	3,686	173	3,243
16. Parsul Tank	1,044	...	1,044	...	...	...	...	1,044	...	1,044	7	379
17. Pravara River Works— Ojhar Canal	5,346	76	5,422	...	196	...	110	5,728	...	5,728	50	1,292
18. Bhatodi Tank	3,815	1,351	5,166	...	33	...	307	5,606	...	5,506	32	637
19. Matoba do.	12,742	...	12,742	...	111	...	82	12,935	...	12,935	23	736
20. Kasurdi do.	340	...	340	...	21	...	163	524	...	524	3	117
21. Shirsuphal do.	3,122	...	3,122	...	130	...	15	3,267	...	3,267	39	1,297
22. Bhadalvadi do.	3,465	...	3,465	...	21	...	191	3,677	...	3,677	31	1,164
23. Koregaon do.	530	...	530	...	11	...	2	543	...	543	9	338
24. Ashti do.	5,438	...	5,438	...	1,453	...	135	5,026	...	5,026	56	1,406
25. Revarti Canal	4,905	...	4,905	...	65	...	...	4,970	...	4,970	11	126
26. Upper Man River Works	3,924	...	3,924	...	98	...	73	4,090	...	4,090	32	357
27. Yeda River Irrigation Works	8,912	...	8,912	...	608	...	48	9,568	...	9,568	41	473
28. Chikhli Canal	1,927	...	1,927	...	107	...	...	2,034	...	2,034	...	...
29. Maini Tank	7,196	...	7,196	...	116	...	37	7,349	...	7,349	...	...
30. Muchkund do.	57	...	57	...	188	...	...	245	...	245	...	2
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	1,987	1,987	...	...	...	...	1,987	...	1,987	...	...
33. Dambal do.	162	668	830	...	228	...	3	1,051	...	1,051	...	...
34. Medleri do.	395	...	395	...	3	...	...	398	...	398	...	...
35. Madag do.	3,867	...	3,867	...	163	...	...	4,019	...	4,019	...	...
36. Asundi do.	163	472	635	...	2	...	...	637	...	637	...	1
37. Mavinkop do.	...	856	856	...	...	...	...	856	...	856	...	...
Total, Minor Works and Navigation	75,180	5,410	80,590	...	5,307	...	2,191	88,088	50	88,038	555	13,095
PROVINCIAL.												
Minor Works and Navigation.												
38. Gokak Canal, First Section, and Storage Works	9,021	...	9,021	...	84	7,710	82	16,397	10	16,887	44	800
GRAND TOTAL	3,60,874	12,647	3,73,521	...	17,636	11,310	1,10,308	5,12,775	793	5,12,072	2,386	58,813

Notes.—(a). The Irrigation share of the land-revenue assessment relates to the Revenue year 1891-92.

(b). The division of Establishment charges between Revenue Management and Maintenance is made in accordance with the orders contained in

C.

*Deccan and Gujarat for the year ending 31st March 1892.**Revenue and Working Expenses.*

WORKING EXPENSES.															
Management.			Maintenance and Repairs.												
Establishment.		Total Revenue Management.	Establishment.				Works.	Repairs.	Sundries.	Tools and Plant.	Plantations.	Total cost of Maintenance.	Indirect charges.	Grand Total Working Expenses.	Net Revenue.
Navigation.	Civil Officers.		Director.	Executive.	Medical.	Total.									
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
...	2,128	9,989	319	5,773	...	6,092	...	22,867	5	500	1,499	30,963	1,953	42,905	1,560
...	984	3,769	72	1,561	...	1,633	...	6,171	...	78	363	8,245	619	12,633	6,588
...	3,112	13,758	391	7,334	...	7,725	...	29,038	5	578	1,862	39,208	2,572	55,538	8,168
...	462	572	121	984	...	1,105	...	3,889	89	42	580	5,655	268	6,495	3,870
...	1,506	3,509	90	1,564	...	1,654	...	6,164	...	...	451	8,269	512	12,290	5,723
...	380	2,342	49	1,067	...	1,116	...	4,265	...	75	201	5,667	431	8,430	9
...	77	788	20	404	...	424	...	1,584	...	44	112	2,164	152	3,054	-1,353
...	7,177	34,085	259	8,506	...	8,765	...	34,514	75	1,936	546	45,836	4,987	84,858	1,62,068
...	619	3,904	76	1,725	...	1,801	...	6,229	...	147	977	9,164	712	18,770	12,343
...	1,775	2,955	101	1,402	...	1,503	...	5,595	152	103	417	7,770	376	11,101	20,788
...	11,996	48,055	716	15,652	...	16,368	...	62,240	316	2,347	3,234	84,505	7,438	1,39,998	2,03,443
...	15,108	61,813	1,107	22,986	...	24,093	...	91,278	321	2,925	5,096	1,23,713	10,010	1,95,536	2,11,611
...	326	787	39	549	...	588	...	2,254	...	...	97	2,939	147	3,873	5,302
...	41	283	2	63	...	65	...	260	...	...	...	325	43	651	139
...	23	605	2	104	...	106	...	181	...	...	242	529	96	1,230	-316
...	128	3,344	110	2,247	...	2,357	...	9,428	...	...	...	11,785	853	16,482	-12,796
...	52	438	1	69	...	70	...	256	...	...	23	349	64	851	193
...	272	1,614	22	578	...	600	...	2,279	...	77	121	3,077	272	4,963	765
...	326	985	22	431	...	453	...	1,521	...	39	293	2,806	156	3,447	2,059
...	637	1,396	7	243	...	250	...	923	...	100	79	1,352	141	2,859	10,046
...	17	137	1	32	...	33	...	134	...	100	...	267	21	425	99
...	156	1,492	12	412	...	424	...	1,609	...	100	87	2,220	246	3,558	-691
...	173	1,368	9	325	...	334	392	854	...	100	90	1,770	214	3,352	325
...	26	373	2	88	...	90	...	362	...	...	...	452	61	886	-343
...	146	1,608	25	650	...	675	...	2,437	...	51	263	3,426	299	5,333	-307
...	245	382	25	273	...	298	...	1,152	...	6	40	1,496	61	1,939	3,031
...	196	585	75	821	...	896	...	3,301	...	97	283	4,577	180	5,342	-1,252
...	446	960	83	950	...	1,033	...	3,601	...	100	529	5,263	217	6,440	3,128
...	96	36	16	107	...	123	...	499	...	10	39	671	17	784	1,250
...	360	360	403	2,965	...	3,329	11,437	2,364	...	52	224	17,396	466	18,222	-10,873
...	3	5	12	83	...	95	...	319	...	...	62	476	14	495	-250
...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	-1
...	199	199	...	...	...	...	...	...	...	...	...	...	...	199	1,788
...	74	74	14	90	...	104	122	327	...	...	...	553	15	642	409
...	20	20	14	95	...	109	...	175	...	...	...	584	15	619	-221
...	193	193	24	160	...	184	...	625	...	...	* 175	984	26	1,203	2,816
...	56	57	14	106	...	120	...	478	...	...	...	598	17	672	-15
...	86	86	...	...	...	...	...	...	...	...	...	...	...	86	770
...	4,297	17,947	934	11,402	...	12,336	11,951	35,680	...	832	2,647	63,896	3,641	84,984	3,054
...	837	1,681	35	622	...	657	...	2,427	...	199	199	3,482	210	5,373	11,514
...	20,242	81,441	2,076	35,010	...	37,086	11,951	1,29,235	321	3,356	7,942	1,00,591	13,861	2,85,393	2,26,179

II—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarát for the year 1891-92, based on actual receipts.

Principal Results of Operations for the year ended 31st March 1892.

Irrigation Works,	Direct and Indirect Capital Outlay to end of 1891-92.	Gross Receipts, Direct and Indirect, from all sources.	Working Expenses, Direct and Indirect.	Net Revenue (excluding charges for interest).	Percentage of net revenue on capital outlay to end of year.	Interest at 4 per cent. on Direct Capital Outlay at commencement of year and at 2 per cent. on Outlay during year.	SURPLUS REVENUE AFTER PAYING INTEREST ON DIRECT CAPITAL OUTLAY.		EXCESS CHARGES, INCLUDING INTEREST ON DIRECT CAPITAL OUTLAY.	
	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.										
MAJOR WORKS.										
PROTECTIVE WORKS.										
<i>In Operation.</i>										
1. Nira Canal	51,27,750	44,485	42,005	1,590	03	1,96,702	...	...	1,05,122	300
2. Mhasavd Tank	20,34,651	19,221	12,633	6,588	32	78,907	...	...	72,770	207
Total	71,62,387	63,706	55,538	8,168	11	2,75,609	...	...	2,67,501	291
<i>In abeyance.</i>										
3. Chankapur Tank	65,373	...	...	...	...	2,516	...	...	2,516	379
4. Maladevi do.	36,116	...	...	...	...	1,358	...	...	1,358	304
Total	1,02,491	...	...	...	...	3,874	...	...	3,874	298
Total, Protective Works	72,64,878	65,706	55,538	8,168	11	2,79,543	...	...	2,71,575	290
PRODUCTIVE WORKS.										
<i>In Operation.</i>										
5. Hathmati Canal	5,18,393	10,365	9,495	3,474	75	19,637	...	...	15,767	107
6. Lower Panchra River Works	4,59,544	18,613	12,290	5,723	124	17,411	...	...	11,799	139
7. Kadva River Works	7,20,182	8,439	8,439	9	...	27,639	...	...	27,639	268
8. Pravara River Works—Lakh Canal	3,72,196	1,704	3,054	1,353	36	14,105	...	...	15,458	200
9. Mutha Canals	63,07,323	2,46,028	84,538	1,02,008	257	2,43,195	...	...	81,127	98
10. Ekrut Tank	18,35,466	26,113	1,770	12,414	65	49,124	...	...	26,781	147
11. Krishna Canal	5,46,745	31,884	11,101	20,783	343	31,958	...	...	11,176	72
Total, Productive Works	1,06,58,006	3,43,441	1,39,693	2,03,443	198	4,08,070	...	...	1,99,637	119
Total, Major Works	1,78,42,884	4,07,147	1,95,230	2,11,611	109	6,82,613	...	...	4,71,002	181
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
12. Khatri Cut	1,74,486	7,173	3,879	3,802	139	6,466	...	...	3,193	148
13. Hatela Tank	79,383	789	631	1,948	19	1,948	...	...	1,790	139
14. Mhasva do.	1,40,930	914	1,230	316	22	5,228	...	...	5,544	250
15. Kadva River Works	10,39,526	3,086	10,482	12,766	123	30,313	...	...	52,100	240
16. Farul Tank	9,09,523	1,044	651	133	19	5,065	...	...	7,802	317
17. Pravara River Works—Ojhar Canal	3,28,523	5,728	4,093	705	22	12,293	...	...	11,628	912
18. Bhatorli Tank	3,79,707	5,506	3,447	2,059	54	14,102	...	...	12,043	185
19. Misola do.	2,09,727	12,905	2,839	10,046	500	7,523	2,520	96	...	...
20. Kargudi do.	45,700	654	420	69	22	1,638	...	...	1,531	165
21. Sirsaphal do.	2,06,008	2,267	3,658	691	31	7757	...	...	8,445	275
22. Bhadavadi do.	2,27,228	3,877	3,352	325	14	5,924	...	...	8,139	255
23. Koregon do.	39,139	543	880	243	38	1,517	...	...	1,899	311
24. Ashpi do.	826,247	5,026	5,323	307	64	28,965	...	...	30,272	253
25. Revarti Canal	68,879	4,910	1,939	3,041	519	2,238	793	73	...	...
26. Upper Man River Works	4,39,554	4,000	5,549	1,253	29	16,274	...	...	17,528	206
27. Verla River Irrigation Works	6,65,163	3,562	6,440	3,123	48	24,479	...	...	21,351	208
28. Chikhli Canal	57,447	2,631	784	1,250	218	2,152	...	...	802	81
29. Maini Tank	3,89,919	7,849	13,222	10,873	279	14,746	...	...	25,619	401
30. Muckhundi Tank	1,55,440	345	455	250	16	5,009	...	...	5,869	238
31. Nilgund do.	8,972	...	1	1	61	849	...	...	350	201
32. Gadekeri do.	9,279	1,887	169	1,798	19	357	1,481	...	...	...
33. Dambal do.	63,673	1,091	612	469	64	2,434	...	...	2,025	225
34. Medleri do.	31,149	308	619	221	27	3,134	...	...	3,355	282
35. Madag do.	1,67,993	4,019	1,203	2,816	167	6,450	...	...	3,834	106
36. Asundi do.	62,439	657	673	15	92	2,430	...	...	2,445	239
37. Marinkop do.	20,357	836	86	770	249	1,104	...	...	354	63
Total	60,63,168	88,038	84,084	3,054	16	2,26,082	...	...	2,29,028	228
<i>In abeyance.</i>										
38. Gokak Canal, 2nd Section	1,90,284	...	...	...	...	7,025	...	...	7,025	247
Total, Minor Works and Navigation	61,53,452	88,038	84,084	3,054	16	2,33,107	...	...	2,30,053	229
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
39. Gokak Canal, First Section, and Storage Work	10,36,508	16,887	5,373	11,344	111	39,708	...	...	28,254	237
GRAND TOTAL	2,61,12,841	5,12,072	2,85,893	2,26,179	101	9,55,489	...	...	7,29,309	106

*The sum at charge being minus, no percentage can be calculated.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

III—C.

Demands and Realizations during the year 1891-92 in Deccan and Gujarât.

Irrigation Works.	Balance of Demands unrealized at commencement of year.	DEMANDS OF THE YEAR.				Total, including Balance at commencement of year.	Deduct Remissions not including Cash Refunds.	Net Total.	Deduct Amount unrealized at close of year.	Actual Realizations of the year.
		Rabi, 1890-91.	Kharif, 1891-92.	Miscellaneous Receipts.	Total.					
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.										
Protective Works.										
1. Nira Canal	114	18,127	24,515	1,980	44,572	44,688	68	44,618	132	44,486
2. Mhasvad Tank	1,279	4,783	14,129	655	19,577	20,856	...	20,856	1,636	19,221
Total	1,393	22,920	38,644	2,635	64,149	65,542	68	65,474	1,767	63,707
Productive Works.										
5. Hâthmati Canal	570	4,947	4,074	1,120	10,141	10,711	...	10,711	846	10,855
6. Lower Pânjhra River Works	2,311	(a) 2,640	6,490	448	(a) 9,577	11,888	...	11,888	509	11,379
7. Kâdva River Works	2,100	1,836	4,487	277	(a) 6,590	8,790	—11	8,781	946	7,835
8. Pravara River Works—Lâkh Canal	32	448	1,067	164	1,669	1,701	...	1,701	...	1,701
9. Mutha Canals	14,460	9,000	1,86,886	1,11,184	2,57,070	2,71,590	146	2,71,384	28,825	2,47,559
10. Ekrûk Tank	1,040	2,455	9,735	14,845	28,535	27,575	...	27,575	1,462	26,113
11. Krishna Canal	7,555	9,078	32,962	1,707	42,747	51,302	...	51,302	19,418	31,884
Total	25,158	30,894	1,85,904	1,20,245	3,55,322	3,53,437	136	3,53,302	46,606	3,06,696
Total, Major Works	26,551	53,814	2,34,334	1,81,830	4,19,478	4,19,929	203	4,19,726	48,273	4,00,553
MINOR WORKS AND NAVIGATION.										
12. Khâri Cut	2,235	...	5,754	646	6,409	8,825	...	8,825	1,450	7,175
13. Harâla Tank	3	116	4	726	846	840	...	840	11	838
14. Mhasva do.	29	850	73	484	837	916	...	916	2	914
15. Jâmda Canals	238	2,080	707	962	3,749	3,973	14	3,973	286	3,687
16. Pârsul Tank	(b) 935	924	631	...	1,555	2,490	...	2,490	1,446	1,044
17. Pravara River Works—Ojhar Canal	198	3,025	2,348	306	(a) 5,862	5,810	...	5,810	158	5,653
18. Bhâstodi Tank	243	916	2,794	352	(a) 4,062	4,305	...	4,305	150	4,155
19. Matoba do.	...	1,578	11,479	193	12,950	12,950	...	12,950	15	12,935
20. Kâsurdi do.	...	270	70	184	524	524	...	524	...	524
21. Shirsuphal do.	...	1,134	1,988	145	3,267	3,267	...	3,267	...	3,267
22. Bhâdâlvâdi do.	20	506	2,930	212	3,667	3,677	...	3,677	...	3,677
23. Koregaon do.	...	200	330	18	548	548	...	548	...	548
24. Ashit do.	408	1,353	2,087	1,590	5,030	5,438	...	5,438	413	5,026
25. Rewâri Canal	8	2,826	2,591	65	5,482	5,490	...	5,490	520	4,970
26. Upper Mân River Works	36	1,247	2,641	169	4,034	4,060	...	4,060	...	4,060
27. Yerla River Irrigation Works	62	3,306	5,624	656	9,586	9,648	...	9,648	80	9,568
28. Chikhlî Canal	48	859	1,546	107	2,012	2,060	...	2,060	26	2,034
29. Mainp Tank	81	7,623	6,450	153	8,226	8,307	...	8,307	968	7,339
30. Muchkundi do.	...	5	52	168	245	245	...	245	...	245
31. Nîlgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	(a) ...	...	...	...	...	...
33. Dâmlal do.	—4	139	17	356	(a) 512	508	...	508	125	383
34. Medleri do.	...	84	311	3	398	398	...	398	...	398
35. Madag do.	1,242	1,283	1,746	152	3,181	4,423	...	4,423	404	4,019
36. Asundi do.	...	76	184	2	(a) 262	262	...	262	77	185
37. Mâvinkop do.	...	...	...	...	(a) ...	...	...	...	...	...
Total, Minor Works and Navigation	5,702	23,403	52,066	7,641	88,110	88,812	14	88,798	6,120	82,678
PROVINCIAL.										
Minor Works and Navigation.										
38. Gokâk Canal, 1st Section, and Storage Works	12	2,384	6,150	7,876	16,919	16,931	...	16,931	34	16,897
GRAND TOTAL	36,265	79,601	2,82,550	1,47,247	6,19,507	5,54,772	217	5,54,555	64,427	6,00,128

(a) Exclusive of Irrigation share of the consolidated assessments.

(b) Consisting of assessments of kharif 1890-91—Rs. 108, rabi 1890-91—Rs. 548, and kharif 1890-91—Rs. 180, levied during 1891-92.

(c) Including Rs. 1,962 on account of rabi of 1891-92 shown in Canal Return No. IX.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

IV-C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarát for the year ended 1891-92, based on the Assessment of the year.

Principal Results and Operations for the year ended 31st March 1892.

REVENUE ASSESSED DURING THE YEAR.													
Irrigation Works.	Capital Outlay (Direct and Indirect) to end of year.	Direct assessed Revenue (a).							Indirect revenue (Land Revenue due to operation of Canal). (b).	Grand Total.	Working Expenses, direct and indirect.	Net assessed revenue of the year.	Percentage on Capital outlay to end of year.
		Occupier's rate.	Owner's rate.	Plantations.	Water-power.	Navigation.	Miscellaneous.	Total.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14
IMPERIAL.	Rs.	Rp.		Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.													
Protection Works.													
1. Nira Canal	51,27,750	55,390	..	412	..	..	1,518	53,309	....	53,320	42,905	25,415	0.60
2. Mhaswad Tank	20,24,637	24,457	..	94	..	..	561	25,112	....	25,112	12,633	13,479	0.68
Total ..	71,52,387	81,847	..	506	..	..	2,079	94,432	...	94,432	55,538	38,594	0.54
Protection Works.													
5. Hithmati Canal	5,18,585	6,715	..	972	..	..	148	7,835	....	7,835	6,495	1,840	0.26
6. Lower Pambh River Works	4,69,544	9,378	..	425	..	..	23	9,724	8,643	15,397	12,230	4,077	0.38
7. Kadva River Works ..	7,20,182	10,157	..	218	..	..	59	10,434	594	11,028	8,430	2,598	0.35
8. Pravara River Works—Likh Canal	3,72,196	1,509	..	157	..	..	7	1,673	....	1,673	3,054	—1,381	0.77
9. Mutha Canals	63,07,225	1,52,451	..	1,544	8,909	..	1,06,040	2,65,685	....	2,65,635	84,858	1,78,777	2.37
10. Ekridi Tank	13,39,406	13,125	..	7,038	..	..	7,287	27,470	....	27,470	13,770	13,700	1.03
11. Krishna Canal	8,46,765	59,102	..	1,955	..	..	243	40,969	....	40,969	11,101	29,968	3.53
Total ..	1,05,58,006	2,32,495	..	11,739	8,909	..	1,12,506	3,67,740	7,237	3,68,977	1,39,998	2,28,979	2.17
Total, Major Works ..	1,77,20,493	3,24,342	..	12,245	8,909	..	1,16,985	4,56,172	7,237	4,68,499	1,96,536	2,67,873	1.61
MINOR WORKS AND NAVIGATION.													
12. Khairi Out	1,74,495	5,754	..	616	..	..	180	6,400	....	6,400	3,873	2,327	1.45
13. Hartala Tank	73,282	302	..	13	..	..	713	1,028	....	1,028	651	377	0.51
14. Mhaswa Tank	1,40,930	826	..	327	..	..	77	790	....	790	1,329	—449	0.32
15. Jambha Canals	10,39,428	3,332	..	553	..	..	109	3,294	....	3,294	16,492	—13,183	1.27
16. Parsul Tank	2,05,232	1,825	..	..	..	..	..	1,825	....	1,825	851	974	0.47
17. Pravara River Works—Ojhar Canal	3,25,233	6,406	..	196	..	..	110	6,796	70	6,873	4,963	1,909	0.55
18. Bhatodi Tank	3,79,702	4,917	..	33	..	..	319	5,199	1,351	6,520	3,447	3,073	0.51
19. Matoba do.	2,00,727	13,059	..	111	..	..	82	13,273	....	13,273	2,839	10,384	5.17
20. Kalsrud do.	45,590	235	..	21	..	..	163	479	....	479	425	54	0.12
21. Shirsapudi do.	2,09,096	2,446	..	130	..	..	15	3,591	....	3,591	3,368	—227	0.18
22. Bhadaniadi do.	2,27,228	3,567	..	21	..	..	191	4,179	....	4,179	3,352	827	0.33
23. Koregaon do.	39,189	1,051	..	11	..	..	2	1,074	....	1,074	836	188	0.46
24. Ashli do.	8,26,247	4,610	..	1,453	..	..	187	6,290	....	6,290	5,353	867	0.10
25. Newari Canal	58,579	4,919	..	85	..	..	..	4,884	....	4,884	1,690	2,915	5.00
26. Upper Man River Works ..	4,39,554	4,302	..	93	..	..	73	4,398	....	4,408	5,340	—574	0.20
27. Terla River Irrigation Works	6,57,163	9,455	..	608	..	..	48	10,112	....	10,112	6,440	3,672	0.66
28. Chikhli Canal	67,432	1,017	..	107	..	..	..	1,124	....	1,124	784	340	1.84
29. Maini Tank	8,89,910	7,989	..	116	..	..	37	8,142	....	8,142	13,223	—10,080	2.59
30. Muchkundi Tank	1,53,549	352	..	188	..	..	..	530	....	530	465	45	0.03
31. Nilgund Tank	8,272	..	..	..	..	..	..	..	1,997	1,997	1	—1	0.01
32. Gadakeri Tank	9,279	..	..	..	..	..	..	..	1,967	1,967	199	1,768	13.27
33. Dambal do.	68,873	325	..	353	..	..	3	681	668	1,240	643	797	1.11
34. Medleri do.	81,149	490	..	3	..	..	..	493	....	493	619	—126	0.16
35. Madga do.	1,67,528	2,736	..	152	..	..	..	2,908	....	2,908	1,203	1,705	1.02
36. Asundi do.	62,450	368	..	2	..	..	..	400	473	872	672	200	0.33
37. Mavinkop do.	30,847	..	..	..	..	..	..	..	896	896	868	770	2.60
Total, Minor Works and Navigation ..	60,63,168	80,809	..	5,432	..	..	2,209	88,450	5,410	93,860	94,984	8,876	0.15
PROVINCIAL.													
Minor Works and Navigation.													
38. Gobak Canal, First Section and Storage Works	10,36,505	11,441	..	84	7,710	..	82	19,317	....	19,317	5,373	13,944	1.35
GRAND TOTAL ..	2,48,20,063	4,16,592	..	17,761	11,810	..	1,18,270	5,63,989	12,647	5,76,596	2,56,593	2,90,693	1.17

Notes.—(a) Excluding remissions shown in Canal Returns No. V for kharif and rabi seasons of 1891-92.

(b) Irrigation share of the land revenue assessment.

F. R. HUTCHINSON,
Examiner, Public Works Accounts.

I—E.
Statement of Areas irrigated by Irrigation Works in the Bombay Presidency, excluding Sind, during the year 1891-92.

AREAS IRRIGATED IN ACRES.										AVERAGES DRAINAGE, CUBIC FEET PER ACRE.				AREAS IRRIGATED PER CUBIC FOOT PER ACRE.				EARS TO WHICH THE DUTIES OF WATER ARE CALCULATED.		REMARKS.
No.	Name of Canal.	Babli.	Total.	Flow.	Litk.	Double-cropped.	At Head.		Utilized.		Discharged at Head.		Utilized.		Babli.	Babli.				
							Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.			Kharif.	Rabi.		
1	Nirn Canal.	9,595	29,863	28,318	45	1,074	178	276	78	53.90	60.31	125.01	69.31	16th January to 16th October.	10	20				
2	Misra Canal.	5,544	4,760	8,347	107	1,074	49.03	76.46	28.03	68.31	62.25	62.36	60.18	16th January to 16th October.						
3		13,130	34,004	37,165	502	2,148	228.33	102.92	106.06	136.62	127.56	137.37	137.49	16th January to 16th October.						
4		1,037	2,420	2,716	31	67	4.93	8.03	4.53	23.17	30.96	50.93	51.72	16th January to 16th October.						
5	Hathi Ti Canal.	1,688	1,010	2,420	2,697	0	1.12	1.37	0.92	0.97	1.24	1.37	1.37	16th January to 16th October.	10					
6	Lower Panjra River Works.	590	1,777	2,823	2,014	36	1.26	1.36	0.93	0.93	1.24	1.37	1.37	16th January to 16th October.						
7	Wardha River.	179	218	307	385	2	1.26	1.36	0.93	0.93	1.24	1.37	1.37	16th January to 16th October.						
8	Wardha River.	7,897	2,084	14,061	13,996	36	1.26	1.36	0.93	0.93	1.24	1.37	1.37	16th January to 16th October.						
9	Pravara River Works - Lakh Canal.	8,071	6,138	13,996	13,996	36	1.26	1.36	0.93	0.93	1.24	1.37	1.37	16th January to 16th October.	10					
10	Black Tank.	1,035	1,202	2,137	3,107	30	609	21.32	38.44	34.29	35.76	62.70	64	64		16th January to 16th October.				
11	Krishna Canal.	2,550	5,174	4,957	4,957	30	609	21.32	38.44	34.29	35.76	62.70	64	64		16th January to 16th October.				
12		17,154	31,970	30,450	880	2,172	6.92	11.57	44.26	77.98	82	19	27	16th January to 16th October.						
Total, Major Works																				
		30,825	58,821	67,555	682	8,246														
NIRN WORKS AND NAVIGATION.																				
13	Nirn Canal.	1,474	1,431	1,431	58		12	10.49	13	12.93	23.71	116.68	238.71	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
14	Misra Canal.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
15	Wardha River.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
16	Pravara River Works - Ojhar Canal.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
17	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
18	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
19	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
20	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
21	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
22	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
23	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
24	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
25	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
26	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
27	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
28	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
29	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
30	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
31	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
32	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
33	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
34	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
35	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
36	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
37	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.	10	* Besides this water was used for 243 acres of land reserved for the Nirn Tank which has not been accounted for.				
38	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
39	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						
40	Black Tank.	1,404	1,313	1,313	1	12	0.97	1.34	0.27	0.26	0.37	0.37	0.37	16th Nov. to end of February.						

During rabi season 2-months and perennial crops are irrigated. The area of this is included in kharif but must be added to rabi area to get duty of water.

Statement showing Incidence of Working Expenses and Assessed Water Revenue on Canals in the Bombay Presidency, excluding Sind, during the year 1891-92.

No.	Name of Work.	WATER-RAIL AMOUNT.				Gross assessed Revenue from all Sources.	Working Expenses Indirect.		Acrea Irrigated year 1891-92.	WORKING EXPENSES.		COURT'S RATE.		TOTAL WATER-RAIL DIRECT AND INDIRECT.		REMARKS.
		Owner's.	Total Direct.	Indirect.	Total.		Rs.	Rs.		Per cent. of Gross Revenue.	Per Acre Irrigated.	Per Acre at Canal Head.	Per Acre at Canal Head.	Per Acre at Canal Head.	Per Acre at Canal Head.	
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Acrea.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1	Mira Canal ..	61,890	61,890	..	61,890	66,320	42,905	28,805	63	68	1-49	219	339	2-90	9-90	
2	Shimard Tank ..	29,435	29,435	..	29,435	26,112	12,683	8,904	1-92	253	253	5-07	810	3-07	7-10	
	Total ..	91,327	91,327	..	91,327	94,432	55,588	37,707	65-61	1-49	..	..	..	..	..	
3	Kidwai Canal ..	6,715	6,715	6,413	6,715	7,855	6,405	2,716	65-39	2-39	165-38	2-97	167-88	2-47	107-48	
4	Lower Tapiya River Works ..	9,370	9,370	..	9,370	12,290	16,307	16,307	76	..	..	..	..	..	..	
5	Waghul Tank ..	8,008	8,008	..	8,008	8,744	8,225	3,223	72	..	..	..	..	..	..	
6	Other Tanks ..	8,008	8,008	..	8,008	8,744	8,225	3,223	72	..	..	..	..	..	..	
7	Kedwa River Works ..	1,306	1,306	..	1,306	1,994	1,994	1,994	188	..	..	..	..	..	..	
8	Pravara River Works—Lathi Canal ..	1,306	1,306	..	1,306	1,994	1,994	1,994	188	..	..	..	..	..	..	
9	Pravara River Works—Lathi Canal ..	1,306	1,306	..	1,306	1,994	1,994	1,994	188	..	..	..	..	..	..	
10	Pravara River Works—Lathi Canal ..	1,306	1,306	..	1,306	1,994	1,994	1,994	188	..	..	..	..	..	..	
11	Krishna Canal ..	89,262	89,262	..	89,262	11,170	11,170	5,374	27	..	..	..	..	..	..	
	Total ..	2,32,465	2,32,465	7,237	2,39,702	139,498	139,498	31,370	37-9	4-16	..	..	..	..	..	
	Total, Major Works ..	3,24,342	3,24,342	..	3,24,342	4,68,400	1,05,535	68,337	45-9	2-35	..	..	..	..	..	
12	Kidwai Tank ..	5,754	5,754	..	5,754	6,400	3,373	1,474	60-51	2-63	98-25	3-90	1,438-5	3-90	1,438-5	
13	Kidwai Tank ..	302	302	..	302	1,038	1,038	1,038	93	..	..	..	..	..	..	
14	Mirasa Tank ..	326	326	..	326	1,780	1,780	1,780	158	..	..	..	..	..	..	
15	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
16	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
17	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
18	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
19	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
20	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
21	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
22	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
23	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
24	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
25	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
26	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
27	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
28	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
29	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
30	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
31	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
32	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
33	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
34	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
35	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
36	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
37	Pravara River Works—Other Canal ..	1,325	1,325	..	1,325	1,994	1,994	1,994	188	..	..	..	..	..	..	
	Total ..	11,441	11,441	..	11,441	19,317	5,373	6,000	27-92	0-59	216-75	1-91	4-89	1-91	4-89	
	Total, Minor Works ..	4,10,592	4,10,592	..	4,10,592	5,76,686	2,35,835	98,025	46-5	2-97	..	..	..	..	..	
38	Gokul Canal, 1st Section, and Storage Works.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	Total ..	80,809	80,809	..	80,809	98,860	64,084	21,483	90-5	30-5	..	..	..	..	..	
	Total, Provincial ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	Total ..	11,441	11,441	..	11,441	19,317	5,373	6,000	27-92	0-59	216-75	1-91	4-89	1-91	4-89	
	GAND TOTAL ..	4,10,592	4,10,592	..	4,10,592	5,76,686	2,35,835	98,025	46-5	2-97	..	..	..	..	..	

† Areas in which consolidated assessments are levied.

The water assessment of Kanara is Rs. 1,139, but the irrigated share of land is not taken into the administrative accounts.

* Revenue on hand increased .. Rs. 1,306
Revenue .. 149
Total .. 1,381

III—E.

Statement of Quantity and Value of Crops irrigated in the Bombay Presidency, excluding Sind during the year 1891-92.

	(1) N'RA CANAL.			(2) MHASVAD TANK.			(5) HATHNATI CANAL.			(6) LOWER PANCHRA RIVER WORKS.			(7) KADVA RIVER WORKS.			(8) PHAYARA RIVER WORKS—LAKH CANAL.			(9) MUTHA CANALS.		
	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.	Area irri- gated.	Estimated Value.	Acres.
Gardens and {	103	2,341	139	57	3,705	324	1	50	6	34	980	1	35	5	175	20	380	325	13,510		
Orchards ... {	160	8,077	57	324	32,400	710	2	50	434	22,745	15	750	3	150	2	100	48	3,956	538	83,682	
Sugarcane ... {	718	1,86,302	324	324	32,400	710	3	...	76	6,120	241	28,920	21	2,526	4	480	71	12,425	4,601	17,46,636	
Wheat ... {	2,689	43,399	710	21,300	322	8,060	322	8,060	464	7,513	847	16,940	82	1,640	106	2,120	97	6,432	1,150	51,417	
Barley ... {	21	189	78	780	174	4,350	174	4,350	...	...	...	...	...	...	...	...	...	...	...	14,618	
Rice ... {	234	2,568	262	3,930	1,327	36,540	31	504	23	690	...	...	2	60	3	90	1	82	166	3,351	
Maize ... {	203	1,137	516	2,580	21	210	25	45	...	...	...	...	...	...	...	...	...	...	...	1,106	
Jowar ... {	14,163	3,42,483	3,351	50,265	...	...	6	43	...	...	...	...	...	...	...	...	...	...	...	66,547	
Chino, Ragi, Rdla, Wara.	18	274	85	850	33	660	...	...	...	...	...	...	...	...	...	...	...	...	...	417	
Bajra ... {	4,944	25,489	245	1,230	...	...	55	450	...	...	...	...	...	...	...	...	...	...	...	28,158	
Miscellaneous ... {	2,163	40,791	512	10,240	608	15,200	...	...	11	272	4	20	...	...	...	...	...	...	...	343	
Gram, Urid, Mug	130	836	11	220	...	...	28	386	...	...	...	...	19	323	13	221	...	...	...	22,562	
Tur ... {	1	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	184	
Peas ... {	2,701	11,439	1,469	73,450	...	...	349	2,233	...	...	...	...	104	3,828	197	6,304	3	135	142	3,373	
Miscellaneous ... {	21	190	...	...	...	...	776	14,035	...	...	...	...	1	10	...	...	...	...	...	63	
Fodder ... {	123	2,773	332	16,600	...	...	2	10	21	210	...	...	1	15	8	120	...	...	...	91	
Fodder Crops ... {	...	...	...	...	...	...	35	365	...	...	...	...	...	...	...	...	...	...	...	1,808	
Lucerne, &c.	2	109	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32,805	
Cotton ... {	...	8	...	...	...	...	141	1,625	...	...	...	...	3	45	2	30	1	60	...	263	
Jug (Hemp)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dyes ... {	133	4,822	32	1,600	...	...	12	56	...	...	...	...	...	...	...	...	...	...	...	59	
Drugs and {	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	160	
Narcotics.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Oil seeds ... {	8	35	3	45	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mustard, Sesam ... {	2	274	3	45	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Linseed, Castor ... {	279	9,485	169	6,760	...	...	39	1,250	...	...	...	...	...	...	...	...	...	...	...	9	
Condiments ... {	25	710	5	200	...	...	176	7,040	...	...	...	...	...	...	...	...	...	...	...	7,161	
Chilly and Onions	...	...	...	...	...	...	114	2,133	...	...	...	...	...	...	...	...	...	...	...	457	
Garlic, Turnericand Methi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Miscellaneous ... {	25	44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Land insufficiently irrigated ... {	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total	28,863	7,84,335	8,304	2,28,980	2,716	73,470	2,603	59,819	2,323	81,036	251	8,586	397	11,508	508	33,760	14,061	20,78,731	...	...	
Area on which consolidated assessment is levied.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

* 18 Gunthas.

[illegible]

	(29) MAIN TANK.		(30) MUCHKONDI TANK.		(32) GADIKERI TANK.		(33) DAMEL TANK.		(34) MEDUR TANK.		(35) MADAG TANK.		(36) ARUN TANK.		(37) MAYINKOR TANK.		(38) GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS.		(39) TOTAL.		
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	
Gardens and Orchards.	38	1,040	...	...	...	...	2	52	13	388	50	2,350	22	1,100	...	...	349	17,450	1,382	51,386	
	37	4,144	...	...	...	...	10	1,620	26	4,212	1	80	2	230	...	...	8	800	1,701	1,57,861	
	115	18,800	...	...	...	...	...	...	13	975	61	9,760	4	400	...	...	100	20,000	9,694	29,72,022	
	160	2,560	1	...	...	...	5	100	...	...	...	...	...	...	...	...	83	2,430	10,364	284,311	
Sugarcane	9	225	...	...	...	...	...	...	...	...	...	...	...	...	...	...	112	2,800	863	24,015	
	11	275	...	...	...	...	...	...	24	480	272	8,160	1	20	...	...	72	2,160	5,003	1,62,772	
	82	1,640	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,291	32,275	2,468	44,659	
	148	2,368	157	...	...	...	110	550	4	20	7	140	31	465	...	...	2,423	72,690	29,095	705,277	
Cereals...	28	280	8	...	...	...	7	35	3	15	17	255	4	40	...	...	374	7,480	732	12,937	
	81	810	...	...	...	...	...	...	...	...	...	...	...	...	...	...	23	460	8,415	87,628	
	22	560	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	25	268	8,345	
	206	2,080	5	...	...	...	13	104	1	8	4	60	1	10	...	...	287	4,305	7,171	1,56,911	
Pulses ...	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	60	251	2,839	
Fodder Crops...	533	18,122	...	...	...	...	...	...	...	...	...	...	...	...	...	...	103	3,090	11,973	5,46,727	
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	419	3,654
	64	960	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	102	2,498
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,089	35,203	
Fibres ...	...	...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	206	33,235	
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3,000	359	6,460
	...	...	...	...	...	...	...	...	2	50	...	...	...	...	...	...	...	...	93	2,001	
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	525	380	380
Dyes and Narcotics	11	330	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	263	11,164
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38	3,394
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	56	1,095
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	1,758
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments	50	1,500	...	...	...	...	...	...	15	405	15	450	...	...	...	...	...	...	...	...	...
	33	1,080	...	...	...	...	16	550	2	70	586	22,854	48	1,104	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	58	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Land insufficiently irrigated ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1,687	51,754	205	...	...	...	163	3,021	103	6,573	1,023	44,319	332	3,737	...	...	6,000	1,87,130	86,025	54,44,456	
Area on which consolidated assessment is levied.	...	...	...	...	...	...	97	...	...	...	...	...	124	...	401	...	...	...	...	...	1,049

STATEMENT No. VI—E.

Comparative Statement of Irrigation and Rainfall for the years 1890-91 and 1891-92 in the Bombay Presidency, excluding Sind.

No.	Works supplying Irrigation.	Civil Station.	Total Area in Acres.	Cultivated Area in Acres.	AREA IRRIGATED IN ACRES.								RAINFALL.		REMARKS.
					• 1890-91.				1891-92.				1890-91.	1891-92.	
					Khairf.	Rabi.	Total.	Khairf.	Rabi.	Total.	1890-91.	1891-92.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14		
					Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Inches.	Inches.		
1	Nira Canal	Poona	307,559	159,876	8,920	7,993	16,913	9,595	19,298	28,863	*20-66	*13-68	* Average of 7 stations.		
2	Mhasvad Tank	Satara, Sholapur and Pant Pratinidhi State.	129,045	106,214	4,081	3,025	7,106	3,544	4,760	8,304	13-56	13-71			
	Total	.....	438,604	266,090	13,001	11,013	24,019	13,139	24,023	37,167	...	...			
	Productive Works.														
3	Hidhmati Canal	Ahmedabad	44,714	8,000	1,268	2,500	3,766	1,357	1,349	2,716	22-67	22-68			
4	Lower Panjra River Works	Khandesh	13,117	12,627	1,566	834	2,390	1,693	1,010	2,503	13-83	22-54			
5	Waghod Tank	Nasik	...	...	...	...	...	...	...	...	...	...			
6	Kalya River	Do.	28,832	9,837	1,128	603	1,731	596	1,727	2,338	20-57	21-42			
7	Other Tambat Canal	Do.	8,095	2,367	141	52	193	76	175	231	26-98	16-72			
8	Waddi Canal	Do.	3,486	2,453	143	155	303	779	208	598	14-94	17-92			
9	Pravara River Works—Lakh Canal	Ahmednagar	94,087	49,890	7,738	3,465	11,303	3,877	6,184	14,061	36-53	17-60			
10	Pravara Canals	Sholapur	17,152	15,820	1,835	793	2,598	1,935	1,292	3,137	27-42	22-90			
11	Krishna Canal	Satara	27,407	25,535	1,738	2,314	3,950	3,259	2,116	5,374	25-87	16-65			
	Total	.....	268,793	137,197	15,795	10,770	26,565	17,184	14,186	31,370	...	...			
	Total, Major Works	.....	703,397	403,357	28,796	21,788	50,584	30,923	38,214	68,537	...	...			

STATEMENT F.

Statement showing the Operations of Irrigation Works in the Deccan and Gujarāt for the year 1891-92.

No.	Names of Works.	AMOUNT DUE, 1891-92.		Remissions.		Total.		Grand Total.	REMARKS.
		Kharif, 1891-92.	Rabi, 1891-92.	Kharif.	Rabi.	Kharif.	Rabi.		
1	2	3	4	5	6	7	8	9	10
MAJOR WORKS.									
<i>Protective Works.</i>									
1	Nira Canal	24,515	41,875	...	...	24,515	41,875	66,390	
2	Mhasvad Tank	14,129	11,328	...	...	14,129	11,328	25,457	
	Total	38,644	53,203	...	...	38,644	53,203	91,847	
<i>Productive Works.</i>									
5	Hāthmati Canal	4,082	2,671	8	30	4,074	2,641	6,715	
6	Lower Pānjhā River Works	2,555	826	...	...	2,555	826	3,381	
7	Kādvā River Works.	...	...	...	...	...	...	...	
		Wāghad Tank	3,343	4,662	...	3,343	4,662	8,005	
		Palkhed Canal	...	...	...	...	...	...	
8	Pravara River Works—Lākhānā Canal	...	...	...	...	...	...	...	
		Ojhar Tāmbat Canal	406	480	...	406	480	886	
9	Mutha Canals	...	...	...	...	...	...	...	
		Wādāli Canal	736	590	...	736	590	1,266	
8	Pravara River Works—Lākhānā Canal	1,259	452	202	...	1,057	452	1,509	
9	Mutha Canals	1,36,886	15,565	...	...	1,36,886	15,565	1,52,451	
10	Ekritik Tank	9,735	3,390	...	...	9,735	3,390	13,125	
11	Krishna Canal	82,962	6,300	...	...	82,962	6,300	89,262	
	Total	1,91,964	34,876	210	30	1,91,754	34,846	2,26,600	
	Total, Major Works	2,30,608	88,079	210	30	2,30,398	88,049	3,18,447	
MINOR WORKS AND NAVIGATION.									
12	Khāri Cut	9,610	...	3,856	...	5,754	...	5,754	
13	Hartāla Tank	4	298	...	...	4	298	302	
14	Mhasva do.	74	252	...	...	74	252	326	
15	Jāmda Canals	707	1,625	14	6	695	1,619	2,312	
16	Parsul Tank	630	1,195	...	...	630	1,195	1,825	
<i>Pravara River Works—Ojhar Canal</i>									
17	Canal	2,549	4,142	201	...	2,348	4,142	6,490	
18	Bhātodi Tank	2,805	2,023	11	...	2,794	2,023	4,817	
19	Matoba do.	11,179	1,901	...	...	11,179	1,901	13,080	
20	Kasurdi do.	70	225	...	...	70	225	295	
21	Shirsuphal Tank	1,988	1,458	...	...	1,988	1,458	3,446	
22	Bhādalvādi do.	2,939	1,028	...	...	2,939	1,028	3,967	
23	Koregaon do.	331	730	...	...	331	730	1,061	
24	Ashti do.	2,087	2,523	...	...	2,087	2,523	4,610	
25	Berāri Canal	2,606	2,253	15	25	2,591	2,228	4,819	
26	Upper Mān River Works	2,640	1,662	...	...	2,640	1,662	4,302	
27	Yerla River Irrigation Works	5,629	3,833	5	1	5,624	3,832	9,456	
28	Chikhli Canal	1,546	71	...	...	1,546	71	1,617	
29	Maini Tank	6,450	1,539	...	...	6,450	1,539	7,989	
30	Muchkundi Tank	51	301	...	...	51	301	352	
31	Nilgund do.	...	...	...	...	...	...	...	
32	Gādikeri do.	...	...	...	...	...	...	...	
33	Dāmbal do.	17	308	...	...	17	308	325	
34	Medleri do.	312	178	...	...	312	178	490	
35	Mātag do.	1,746	1,010	...	...	1,746	1,010	2,756	
36	Asundi do.	184	214	...	...	184	214	398	
37	Māvinkop do.	...	...	...	...	...	...	...	
	Total	56,154	28,769	4,102	32	52,052	28,737	80,789	
PROVINCIAL.									
39	Gokāk Canal, 1st Section, and Storage Works... ..	6,160	5,281	...	...	6,160	5,281	11,441	
	GRAND TOTAL	2,92,922	1,22,129	4,312	62	2,88,610	1,22,067	*4,10,677	

* Note.—The difference of Rs. 5,916 between this, and the Grand Total of direct water-rates (vide column C of Statement II—E.) is as under:—

(a) Enhanced water-rates on old works of the Lower Pānjhā system Rs. 5,895
(b) Remissions on the Jāmda Canals (shown above) pertaining to revenue from Government farm at Bhidgaon assessed and realized by the Executive Engineer. The remission was granted after submission of Canal Return V 20

Total Rs. 5,915

I-F.

Statement showing Water-rates per Acre in force during 1891-92 on Irrigation Works in the Bombay Presidency, excluding Sind.

No.	Names of Works.	WATER-RATES.					Occupiers' Rate.	Owners' Rate.	Water advantage.	REMARKS.
		Class I.	Class II.	Class III.	Class IV.	Class V.				
		Perennial.	Eight months.	Four months.	Monsoon dry.	Special hot weather.				
1	2	3	4	5	6	7	8	9	10	11
	MAJOR WORKS.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
	<i>Protective Works.</i>									
1	Nira Canal	10	4 0 0	2 0 0	0 12 0	5 0 0				Half rates are levied on irrigation from leakage water picked from nálas at the expense of the cultivators.
2	Mhasvad Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
	<i>Productive Works.</i>									
5	Háthmati Canal	10	3 0 0	2 0 0	1 0 0	0 6 0				
6	Lower Pánjhra River Works...	10	4 0 0	2 0 0	1 0 0	4 0 0				
	Palkhed Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
7	Kádva River { Ojhar Tánbat	8	4 0 0	2 0 0	1 0 0	6 0 0				
	Works. { Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
	Wadálí Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
8	Pravara River Works—Lákh									
	Canal	8	4 0 0	2 0 0	0 8 0	4 0 0				
	First Section, i.e. within	A. 50		2 8 0						
	the Poona City and the	B. 9.	5 0 0		1 4 0	6 0 0				
	suburban Municipal and	C. 6		2 0 0						
	Cantonment limits or									
	within one mile of these									
	limits.									
	Second Section, i.e. for all	A. 25		2 8 0						
	villages excepting those	B. 18	5 0 0		1 4 0	6 0 0				
	within the above men-	C. 12		2 0 0						
	tioned limits within a									
	radius of 8 miles from									
	Poona.									
	Third Section, i.e. for vil-	A. 18		2 0 0						
	lages beyond those limits.	B. 12	4 0 0	1 8 0	1 0 0	6 0 0				
	C. 10									
	For Pán gardens wherever									
	situated throughout the									
	canal	30								
10	Ekrak Tank	10	4 0 0	2 0 0	0 12 0	6 0 0				
11	Krishna Canal	22	4 0 0	2 0 0	1 0 0	6 0 0				
	MINOR WORKS AND									
	NAVIGATION.									
13	Khárl Cut	14	27 0 0	5 0 0	1 0 0	...				
13	Hartála Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
14	Mhaswa Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
15	Jamda Canals	16	4 0 0	2 0 0	0 8 0	4 0 0				
16	Parsul Tank	...	...	4 0 0	1 0 0	6 0 0				
17	Pravara River Works (Ojhar									
	Canal)	8	4 0 0	2 0 0	0 8 0	4 0 0				
18	Bhatodi Tank	12	4 0 0	2 0 0	1 0 0	4 0 0				
	A. 18									
	B. 12		4 0 0		1 0 0	6 0 0				
	C. 10			1 8 0						
18	Matoba Tank									
	Pán gar-									
	dens 30		...	...	...	...				
	A. 16									
	B. 12		4 0 0	2 0 0	0 12 0	6 0 0				
	C. 10									
20	Kásurdi Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
21	Shireuphal Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
22	Bhádalvadi do.	16	4 0 0	2 0 0	0 12 0	4 0 0				
23	Koregaon do.	6	2 0 0	2 0 0	2 0 0	2 0 0				
24	Ashti do.	12	4 0 0	2 0 0	0 12 0	4 0 0				
25	Bavári Canal	18	4 0 0	2 0 0	1 0 0	6 0 0				
26	Upper Mán River Works ...	18	4 0 0	2 0 0	0 12 0	6 0 0				
27	Yerla River Irrigation Works	18	4 0 0	2 0 0	1 0 0	6 0 0				
28	Chikhli Canal	18	4 0 0	2 0 0	1 0 0	6 0 0				
29	Maini Tank	18	4 0 0	2 0 0	0 12 0	6 0 0				
30	Muchkundí Tank	8	4 0 0	2 0 0	1 0 0	4 0 0				
31	Nilgund do.	...	...	...	...	...				
32	Gadikeri do.	...	...	...	...	...				
33	Dámbal do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
34	Medleri do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
35	Madag do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
36	Asundi do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
37	Mávinkep do.	...	...	...	...	...				
	PROVINCIAL.									
39	Gokak Canal, 1st Section, and	10	(b) 3 0 0	(d) 1 8 0	0 12 0	(f) 5 0 0				
	Storage Works	(a) 7	(c) 6 0 0	(e) 2 0 0						

Note.—(1) For lift irrigation half the ordinary rates are charged.
 (2) Double the ordinary rates are charged as penal rates for taking water without permission.
 (3) Leakage or percolation rates are the same as ordinary rates.

STATEMENT G.

Statement showing Areas and Water-rate Assessments during 1891-92 according to the system of classification adopted in fixing the Scale of Water-rates.

Number.	Name of Work.	CLASS I.—PERENNIAL		CLASS II.—3 MONTHS.		CLASS III.—4 MONTHS.		CLASS IV.—MORRISON DRY.		CLASS V.—SPECIAL HOT WEATHER.		MISCELLANEOUS.		GRAND TOTAL.		REMARKS.
		Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.	Acres.	Assessment.	
MAJOR WORKS.																
Protective Works.																
1	Nira Canal	876	8,307	4,812	17,300	18,018	55,905	5,504	4,176	138	650	15	46	28,363	69,330	
	Mhasvad Tank	384	3,906	2,398	9,608	4,786	9,606	373	289	363	1,706	...	70	8,304	25,467	
	Total	1,260	12,173	6,710	27,214	22,804	45,514	5,877	4,465	501	2,356	15	125	37,167	91,847	
	Average rate	...	9.68	...	4.06	...	1.99	...	0.75	...	4.70	...	8.33	...	2.47	
Productive Works.																
5	Hathmati Canal	5	51	1,327	3,862	1,343	2,964	22	22	...	...	20	84	2,716	6,733	Inclusive of remissions.
6	Lower Panjhra River Works	103	1,004	547	1,397	394	796	10	15	27	111	2	3	888	3,883	
7	Katva River & Ojhar Tanks Canal Works. (Wadali Canal)	256	2,967	745	3,171	1,169	2,374	55	73	30	168	69	152	2,323	5,001	
		24	204	107	438	112	224	6	6	3	12	1	2	251	886	
		6	47	206	820	113	345	4	7	8	48	...	...	397	1,267	
8	Pravara River Works—Likh Canal—First Section, i.e., within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits.	120	773	44	173	220	476	114	68	10	28	...	...	598	1,508	
		(A. 669	45,158	...	...	...	...	...	...	...	...	...	...	...	...	
	Second Section, i.e., for all villages excepting those within the above-mentioned limits within a radius of 8 miles from Poona.	B. 538	4,574	343	1,667	1,051	3,278	75	89	...	...	8	613	...	...	
	Third Section, i.e., for villages beyond these limits.	(C. 133	1,112	...	...	...	...	...	...	...	...	...	...	...	...	
		(A. 9,811	64,981	...	...	...	...	...	...	...	...	...	...	...	...	
9	Mutha Canals.	B. 49	747	...	...	...	...	...	...	...	...	...	...	14,061	1,52,451	
		(C. 89	981	...	...	...	...	...	...	...	...	...	...	...	...	
		(A. 832	13,671	...	...	...	...	...	...	...	...	...	...	...	...	
		B. 15	165	...	...	...	...	...	...	...	...	...	...	...	...	
		(C. 20	186	...	...	...	...	...	...	...	...	...	...	...	...	
	For pan gardens wherever situated throughout the Canal.	B. 38	1,049	...	...	...	...	...	...	...	...	...	...	...	...	
10	Ekrak Tank	644	6,332	890	3,467	1,090	2,240	424	325	94	603	25	6	8,137	13,125	
11	Krishna Canal	1,227	24,407	2,715	10,348	1,230	2,536	20	25	176	1,874	...	12	5,374	39,262	
	Total	7,663	1,68,023	7,552	29,120	11,244	23,946	2,438	2,339	247	2,344	131	873	29,655	2,26,638	
	Average rate	...	21.1	...	3.86	...	2.13	...	0.95	...	6.75	...	6.08	...	7.64	
MINOR WORKS AND NAVIGATION.																
12	Khari Cut	7	49	1,467	8,148	...	...	...	...	...	...	...	...	1,474	8,169	Inclusive of remissions.
13	Hariala Tank	1	5	2	15	128	337	9	17	2	...	...	...	142	301	
14	Mhasva do.	6	56	16	65	98	190	...	...	...	...	...	...	121	326	
15	Jandia Canals	57	595	52	184	719	1,490	48	29	13	58	...	...	873	2,332	
16	Parul Tank	...	...	...	...	291	1,102	23	23	97	640	...	...	411	1,925	
17	Pravara River Works (Ojhar Canal)	2,229	1,608	62	260	1,230	4,148	319	169	86	319	...	...	2,681	6,490	
18	Bhadioli Tank	(A. 65	661	2,181	949	1,937	12	11	9	28	...	...	...	1,576	4,818	
		(B. 1	12	...	...	...	...	...	...	...	...	...	...	...	...	
19	Matoba do.	(C. 2	...	...	...	...	...	...	...	...	...	...	...	...	...	
		(A. 1	21	...	...	...	...	...	...	...	...	...	...	...	...	
20	Kasurdi do.	(B. 10	...	...	...	...	...	...	...	...	...	...	...	...	...	
		(C. 1	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	Shirsuphal do.	(A. 133	1,368	...	...	...	...	...	...	...	...	...	...	...	...	
		(B. 28	249	194	762	417	870	179	133	...	...	...	...	...	...	
		(C. 6	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	Bhadasavadi do.	(A. 244	2,531	...	...	...	...	...	...	...	...	...	...	...	...	
		(B. 9	85	...	...	...	...	...	...	...	...	...	...	...	...	
		(C. 44	44	70	281	464	1,108	60	36	...	...	...	...	...	...	
		(A. 54	54	...	...	...	...	...	...	...	...	...	...	...	...	
23	Koregaon do.	54	307	155	310	213	440	...	...	...	...	...	...	...	...	
24	Ashdi do.	30	661	236	858	1,197	2,831	...	...	...	...	...	...	...	...	
25	Revadi do.	117	2,058	559	2,332	146	848	...	...	...	...	...	...	...	...	
26	Upper Man River Works	43	800	596	2,410	406	827	812	237	29	220	...	...	...	...	
27	Yerla River Irrigation Works	154	2,741	1,016	4,233	925	1,835	56	56	70	548	26	49	2,247	19,482	
28	Chikhli Canal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	Maini Tank	151	2,760	781	3,101	465	981	108	0	143	1,020	58	87	1,687	7,065	
30	Muchkundi do.	6	51	...	...	...	...	...	...	...	...	...	...	...	...	
31	Nigand do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
32	Gadikeri do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	Dambal do.	2	18	...	...	...	...	...	...	...	...	...	...	...	...	
34	Medleri do.	30	297	7	43	65	136	...	...	...	...	...	...	...	...	
35	Madga do.	62	821	75	428	86	181	...	...	...	...	...	...	...	...	
36	Asundi do.	6	61	26	161	31	171	...	...	...	...	...	...	...	...	
37	Mavinkop do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	Total	2,086	28,472	6,218	27,152	10,670	22,722	1,834	1,488	511	3,286	119	175	21,468	88,295	
	Average rate	...	13.6	...	4.36	...	2.13	...	0.78	...	6.48	...	1.47	...	3.67	
PROVINCIAL.																
39	Gokak Canal, 1st Section, and Storage Works	117	1,167	667	2,066	2,801	5,265	3,030	1,532	140	738	245	696	6,000	11,441	
	Grand Total	11,418	2,09,335	21,147	86,492	47,519	97,460	12,219	9,804	1,499	8,771	610	1,569	94,316	4,18,221	
	Average rate	...	18.3	...	4.04	...	2.05	...	8.02	...	5.85	...	8.66	...	4.38	

Note.—The difference between the figures of total areas and assessments in this Statement and those in Statements I—E to IV—E is due to difference in treatment of rations in some cases, and in others to the fact that the figures in this statement are more or less hypothetical and are arrived at on the assumption that certain areas are assessed at certain rates.

PART I.

MAJOR WORKS.

PROTECTIVE IRRIGATION WORKS.

(1).—NIRA CANAL.

1. The irrigable area under command of the canal at the close of the previous year was 1,35,727 acres. During the year, the first 10 miles of Distributary No. 59 were brought into operation, commanding an additional area of 24,149 acres. The total area under command of the canal, therefore, at the close of the year was 1,59,876 acres.

2. The total area irrigated during the year was 28,863 acres which compares with the previous five years as follows :—

Years.	Kharif.	Rabi.	Total.	Water-rates assessed.
	Acres.	Acres.	Acres.	Rs.
1887-88	2,765	2,763	5,528	7,829
1888-89	4,209	14,350	18,559	20,671
1889-90	9,819	12,111	21,930	24,688
1890-91	8,920	7,993	16,913	36,226
1891-92	9,595	19,268	28,863	66,390

3. The area irrigated was 11,950 acres more than in 1890-91, and the total was greater than any year since the canal was opened. The large increase is due to the deficient rainfall in the kharif season and to the almost complete failure of the late rabi rain. The increase in the kharif dry-crop (bājri) was small, but in the rabi (jowāri) it amounted to 9,643 acres and in gram the increase was 1,119 acres. The area of perennial irrigation has also increased, the total for the year being 875 acres as compared with 350 in the previous year. The area of sugar-cane has increased from 270 to 715 acres.

4. The area of irrigation applied for compares with that determined by measurement as follows :—

Season and Years.	Applied for.	Irrigated.	Difference.	Percentage of difference on Area applied for.
<i>Kharif.</i>			<i>Excess.</i>	
1890-91	7,303	8,920	1,617	.....
1891-92	7,878	9,595	1,717	.....
<i>Rabi.</i>				
1890-91	6,584	7,993	1,409	.....
1891-92	11,653	19,268	7,615	.....
<i>Totals.</i>				
1890-91	13,887	16,913	3,026	21.79
1891-92	19,531	28,863	9,332	47.78

5. The increase of the measured area as compared with that applied for, is due to the people entering in their applications the minimum area, for which they know, they will be charged, instead of estimating the area that they really

wish to irrigate. They know that the crops will be measured and they will be charged according to measurements, and that if a field measures less than the minimum they will still be charged for the minimum area; it therefore appears to them quite safe to put down the minimum area. In many cases last rabi season, the people applied for one field of jowári only, but when their turn came to take water and there were no signs of rain, they irrigated two or three fields. It was found in one case that a man had applied for two acres and was irrigating 17 acres. This only occurs in the case of the kharif and rabi dry-crops, and might be checked by charging double rate for any large excess over the area applied for, on the grounds that it is for water taken without permission, but as long as there is a plentiful supply of water it would be unwise to run the risk of checking the development of irrigation, as this in all probability would.

6. The following table shows the total rainfall of the year at the different stations along the canal:—

		1891-92.						Average for 10 years from 1881 to 1890 both inclusive.		Average of 5 years from 1887 to 1891 inclusive.	
		Kharif.		Rabi.		Total.					
1	Pimpra ...	7	46	6	44	13	90	19	94	20	30
2	Vadgaon ...	5	51	2	67	8	18	20	02	18	28
3	Pandhara ...	7	33	5	03	12	86	19	12	19	06
4	Bárámáti ...	8	25	3	74	11	99	19	89	18	31
5	Sansar ...	9	37	4	42	13	79	20	77	20	44
6	Haturna ...	14	32	6	25	20	57	19	75	19	91
7	Nimbgaon ...	10	85	4	93	15	78	19	29	18	59
	Total ...	63	59	33	48	97	07	138	78	134	89
	Average ...	9	08	4	78	13	86	19	82	19	27
	Total as per Statement IV. E.	1386									
8	Virwadi ...	8	22	6	31	14	53	19	98	18	81
9	Indápur ...	12	44	3	88	16	32	25	56	22	69

7. There was a slight rise in the river on the 4th July, but the flood due to the monsoon rain did not occur till the 27th July, later than any year yet recorded. The flood of the 27th—29th July rose to a height 7-10 feet above the crest of the main weir and 12-60 feet above the subsidiary weir at Vir. From this date until the beginning of October the supply in the river was more than sufficient for the irrigation. Early in October the river supply diminished rapidly, and, as there was no late rain, it was necessary to supplement the natural river discharge by drawing off from the storage at Bhatghar, where the total quantity stored amounted to above 3,500 millions of cubic feet.

8. The following shows the average monthly discharge of the canal at the head:—

April ...	112	October ...	233
May ...	102	November ...	276
June ...	101	December ...	287
July ...	240	January ...	263
August ...	158	February ...	172
September ...	274	March ...	136

9. The working expenses including indirect charges amounted to Rs. 42,905.

Working Expenses. This is at the rate of Rs. 447 per mile of main canal, viz., 96 miles, and includes the maintenance of 119 miles of Distributaries. The rate per acre irrigated amounted to Rs. 1.49, as compared with Rs. 1.89 in previous year. The working expenses of the year shew an increase of Rs. 12,416 on the figures for the previous year. This is due chiefly to a large expenditure on repairs, on account of some breaches in the canal banks, and to an increase in length of distributaries. The charge for establish-

ment was increased in proportion to the increase in expenditure on repairs. The increase in establishment charges was also due to the increase in pay of the subordinates, due to promotion. It is satisfactory to note that no increase in the strength of the establishment in charge of irrigation was necessary, although the area of irrigation rose from 16,913 acres in the previous year to 28,863 acres.

10. The gross revenue from all sources amounted to Rs. 68,320, of this amount Rs. 66,390 was on account of direct water-rates and the balance for receipts from plantation and canal produce. The net revenue for the year was Rs. 68,320—Rs. 42,906 = Rs. 25,414.

11. The expenditure on plantations was Rs. 1,499 and the receipts amounted to Rs. 412. Information regarding the number of trees could not be given, as they were not counted this year. During 1890-91 when the crop measurers had less work to do than usual, they were employed on this work. Last year they were fully engaged throughout both kharif and rabi seasons. It is moreover thought unnecessary to spend money on counting the trees more than once in four or five years, as the numbers increase very slowly.

12. The area irrigated with the exception of a small area of sub-divided Cost of measurement of land was measured at a total cost of Rs. 1,685, or at irrigation. the rate of 11 pies per acre.

13. The following table shows the duty of water in the case of a few of the distributaries. The discharges were, however, only roughly gauged and the results are not satisfactory :—

Number of Distributary.				Discharge in cubic feet per second for rabi 4 months.	Area irrigated.	Duty in acres per cubic feet per second.
No. 8 in 22nd mile of main canal	...	...	...	2.53	687	271
No. 15 in 30th do. do.	...	...	...	2.19	492	225
No. 18 in 34th do. do.	...	...	...	10.07	2,001	199

It was quite impossible to arrange for accurate gauging of distributaries last year, as the establishment had as much as they possibly could do, owing to the large increase in the area of irrigation. The observations referred to were obtained from the observed depth in the distributaries and from a few observations of velocities. Arrangements will be made to have careful observations of discharges taken in some of the principal distributaries during the next rabi season.

14. The following table shows the area irrigated from some of the principal distributaries, and percentage of irrigation to net irrigable area commanded :—

No. of Distributary.	Mileage of main canal.	Area irrigated.		Irrigable area under command.	Percentage of irrigation to land under command.	
		Kharif.	Rabi.		Kharif.	Rabi.
		Acres.	Acres.	Acres.		
6	18th mile	315	778	3,369	9.3	23.0
8	22nd do.	189	617	2,400	7.8	25.7
18	34th do.	471	2,071	9,703	4.9	21.3
19	34th do.	107	547	641	16.7	85.0
24	42nd do.	547	1,479	14,618	3.7	10.1
28	49th do.	220	133	583	37.7	22.8
36	64th do.	930	1,051	9,694	9.6	10.8
46	75th do.	402	497	9,835	4.0	5.0
57	90th do.	670	934	15,931	4.2	5.8

The total area under command of all the distributaries was 159,876 acres. The area irrigated during the kharif season was 6 per cent. and during the rabi season 12 per cent. of the area commanded.

15. The total area irrigated and assessed during the year was 28,863 acres, and the assessment on this area amounted to Rs. 66,390, or at the rate of Rs. 2·30 per acre, as compared with Rs. 2·22 per acre in the previous year.

16. The chief point to be noted in the year's operations is the large increase in the area of rabi irrigation. The area was 19,268 acres, out of which 14,163 acres were for the rabi dry-crop, *viz.* jowári. This large area necessitated a greater discharge in the main canal than had previously been attempted and much valuable experience was gained in connection with the working of both the canal and the distributaries. Unfortunately a deep rock cutting in the 32nd mile when originally excavated was left several feet narrower than designed, with the idea that the remaining excavation could be more economically done after the rock had been exposed to the air for some time. It was found that when the depth of water in the canal at the head was 6 feet, there was a heading up of over 2 feet above the cut in the 32nd mile. The result was that the depth in several miles above the cut was up to the full maximum designed depth and there was percolation in this length due to a head of over 8 feet instead of about 5½ feet as it should have been, if the canal had been clear. This no doubt assisted in reducing the duty of water to the low figure shown in Statement No. 1, E. The cut has now been excavated to the full required width and the obstruction removed. It was found that any increase in depth over 5½ feet increased the loss by percolation enormously, and many weak places in the banks and large leaks were discovered, that subsequently had to be strengthened and puddled. The first 15 miles in particular had to be very carefully watched, all the leaks and weak places were noted, and in the hot weather all the worst places were opened up and puddled. Much, however, still remains to be done, especially, in the treacherous yellow kural soil before this section of the canal can be considered safe to carry the full designed depth.

The chief point noticed in the working of the distributaries was that the carrying capacity of many of them is too small, in the case of a sudden and urgent demand. When rain fails, as it did during the rabi season, the people wait till their crops are almost withering, in the hopes that rain will come, then when they see it is hopeless, they all demand water at one and the same time. The most careful organization is then required to give water to the largest area possible in the shortest time and the time required for completing one watering depends directly on the carrying capacity of the distributary. Last rabi season with an area of irrigation considerably less than the estimated maximum, most of the distributaries had to be worked continuously to their full capacity, the chief complaint from the people being that they could not get water sufficiently quickly. The distributaries were designed on the assumption that 50 per cent. of the area commanded might be irrigated in one season, and that the duty of water was 100 acres to the cubic foot per second, which is a fair average for the whole season. Experience now shows that the carrying capacity of a distributary should be calculated, so as to give one complete watering to the probable maximum area, in a certain time, which must be assumed. From observations, it has been found that one cubic foot per second at the head of a distributary will irrigate two acres of land in a day of 10 hours, *i.e.*, complete one watering of the crop, all distributaries being closed at night. This must vary according to the lengths of distributaries and field channels. For small distributaries close to the main canal a larger area can be watered and less from the longest distributaries. The first point to settle is the percentage of the total irrigable area under command that may be expected to be irrigated in one season. For commands up to 1,000 acres, 60 per cent is possible for dry-crop irrigation in a famine year. From 1,000 to 6,000 acres 40 per cent. and from 6,000 to 10,000, 20 per cent. The next point is to determine in what time a distributary should be able to complete one watering of the maximum area. The limit should

not be more than 30 days, when the chief irrigation is dry-crop, which requires one watering a month. On this basis, therefore, a distributary like No. 36 with a net command of 9,600 acres assuming 40 per cent. under irrigation in one season should have a discharging capacity at the head of 64 cubic feet per second, whereas it has been constructed for 45 cubic feet per second. The discharging capacity of most of the distributaries can however be increased by strengthening and raising the banks so as to increase the depth of full supply. On the same basis the irrigating capacity of the main canal may be determined. As the canal is kept flowing both night and day each cubic foot per second will irrigate 4 acres. The discharging capacity at the head is 456 cubic feet per second, and allowing 1 cubic foot per second per mile for loss by percolation, &c., the available discharge is 355 cubic feet per second. The main canal, therefore, can complete one watering in 30 days on an area of 42,700 acres, or 23 per cent. of the whole area commanded.

One of the chief reasons why the duty of water was so low during the rabi season was that the crops irrigated were on land that was extremely dry and not prepared in any way for irrigation when the seed was sown, as the people expected sufficient rain to bring the crops to maturity without irrigation. The field channels were dug hurriedly, and although a small bund round every field was insisted on, the consumption of water in the fields due to the unevenness of the ground, especially for the first watering, was excessive. The figures showing the duty of water entered in Statement No. I.E are somewhat lower than they should be, especially for the rabi season, as there was a large area of eight months and perennial irrigation from the previous kharif, that had to be supplied in addition to the area actually applied for during the rabi season alone.

(2).—MHASVAD TANK.

The rainfall gauged at Rājovādi was kharif 10·81 and rabi 3·44 = 14·25 inches, against 15·68 inches in the previous year, and at Khatphal it was 10·68 kharif and 2·51 rabi, or 13·19 inches against 11·44 in the previous year. The average rainfall of these two stations was—

1890-91	...	...	...	13·56
1891-92	...	...	...	13·71

There was no replenishment in the tank during the early rains. Total rise in the tank during the remaining part of the year was as follows :—

				Feet.
June	1891	...	...	9·10
September	„	...	...	0·30
October	„	...	...	5·20
Total				14·60

On the last replenishment the R. L. of the water in the tank was 1,938·45, or the height of water in the tank above the canal sluice was 22·75. The R. L. of the present waste weir wall is 1,938·40.

The R. L. of the water in the tank before the rainy season set in, viz., on the 5th June 1891, was 1,928·40. The lowest R. L. of the water in the tank was 1,927·80 or 12·10 feet above the canal sluice. The supply in tank would have been ample for the area of 3,544 acres in the kharif season, had the rains failed.

2. The area irrigated during the year was as follows :—

Kharif.	Rabi.	Total.
3,544	4,760	8,304

representing an increase of 1,198 acres over the area of the previous year, viz., 7,106 acres. The land under command is generally inferior, on which only kharif can be profitably grown. No new distributary was opened in the year.

This is the sixth year since the opening of the canals for irrigation. The following figures of acres will show that the irrigation is increasing gradually :—

Year.				Area irrigated.
1886-87	...	...	...	... 1,344
1887-88	...	...	...	... 3,861
1888-89	...	...	...	... 6,104
1889-90	...	...	...	... 6,792
1890-91	...	...	...	... 7,106
1891-92	...	...	...	... 8,304

The length of the canals, branches and distributaries is 94 miles.

3. This year the water was not granted free, as no new village used it for irrigation.

4. The area applied for as per statement of Irrigation operations was as under:—

		Kharif.	Rabi.	Total.
Applications	...	... 2,970	3,665	6,635
Actual	...	... 3,544	4,760	8,304
Increase	...	... 574	1,095	1,669

The increase is due to the insufficient rainfall this year. The cultivators irrigated more area than entered in the applications.

5. As usual the irrigated area was measured by the measurers engaged specially for the purpose, and the subordinate in charge checked the measurements to the extent of 10 per cent. on the total area irrigated. The total cost on this account was Rs. 1,448 representing Re. 0-2-9 per acre irrigated.

6. The working expenses amounted to Rs. 12,633 against Rs. 12,729 in the previous year. The charges for collection were Rs. 984. The maintenance charges were Rs. 6,534 exclusive of all charges, direct and indirect, representing Rs. 70 per mile, the canals in operation being 94 miles.

7. The assessment of the year from all sources amounted to Rs. 26,112 of which Rs. 25,457 were on account of water-rates. The area irrigated consists to a great extent of irrigation in dry-crops. This year the rates are increased. The special rate (annas 12 per acre) for the Mál land assessed with less than annas 4 per acre by the Revenue Department is abolished; hence there is an increase in the realization of the assessment over the previous year.

8. The realizations from all sources were Rs. 19,221, of which Rs. 655 only were from miscellaneous receipts. The working expenses were 66 per cent. on the revenue. During the year the maintenance charges were considerably reduced and great economy was exercised in the expenditure. The expenditure on plantation was Rs. 363 and the receipts Rs. 94.

9. The number of trees above 5 feet in height was 12,926, and of those below 5 feet was 12,334. The ground along the line of the canals except in small portions, being muram and rocky, plantations are not in a promising state. However, they have been extended where feasible with economy.

10. Experiments were made on this canal to determine the duty of water and the results were as following :—

Crops.		Area in gunthas and annas.	Quantity of water required to mature.
Wheat Jod	...	... 21 10	31,958-66 c. ft.
Wheat Jod No. 2	...	... 29 1	40,172-64 c. ft.
Sweet potatoes	...	... 27 2	79,744-8 „

For general results ascertained from the discharge at head no data for the duty can be fixed until all the discharge in the canals is utilized for irrigation; however, the results obtained are given in the Statement I E. as usual.

11. Five rain gauges were maintained to ascertain the rainfall on the catchment area, which is 480 square miles. The average rainfall at these stations was 15-10 inches, which gives 16,838-6 millions of cubic feet of water that fell

on this area. The run-off is calculated to be 0·137 of the total rainfall. When taken for calculation the rainfall from June to October 1891, the run-off is 0·142, representing 15,891 millions of cubic feet.

12. The following gives the loss in evaporation, absorption, &c.

The total quantity of water in the tank for use during the year. 3,453,514,332

Deduct—

Quantity discharged through the canal and
leakage 1,685,936,480

Actual quantity in the tank on 1st of March
1892 981,454,594

2,617,391,074

Total quantity lost by evaporation, absorption during the
year 1892 (height 6'13) 836,123,253

13. A storage tank at the tail of Wākri Branch has been constructed to store the water that goes to waste by night.

PRODUCTIVE WORKS.

(5).—HATHMATI CANAL.

The rainfall for the year under report was 22·46 inches in the kharif and 0·22 inches in the rabi season, against 22·11 and 0·56 inches respectively the previous year, the average of the last five years being as follows :—

	In. etc.
Kharif	22 53
Rabi	1 04

2. The areas irrigated during the last year and the year under report were as under :—

	Kharif, Acres.	Rabi, Acres.	Total, Acres.
1890-91	1,266	2,500	3,766
1891-92	1,367	1,349	2,716

3. The assessments were as follows :—

	Kharif, Rs.	Rabi, Rs.	Total, Rs.
1890-91	3,727	4,947	8,674
1891-92	4,074	2,641	6,715

4. The decrease in the total area irrigated and in the assessments was due to the partial failure of the rabi irrigation caused by an insufficient supply in the canal during the rabi season owing to the scanty rainfall. There was, however, an increase of 101 acres in the kharif area, owing to new land having been brought under irrigation during the kharif season, when sufficient water was available in the canal.

5. Remissions amounting to Rs. 38 were granted during the year.

6. The areas applied for and irrigated were as under—

	Kharif.	Rabi.
Applied for	1,145	800
Irrigated	1,367	1,349

The difference is due to the fact that the cultivators generally apply for a less acreage than actually required by them for irrigation, and also to the circumstance that lands situated within 200 yards of the canal and thus benefitted by percolation are assessed, though no applications are made for such lands.

7. The miscellaneous revenue realized amounted to Rs. 1,120 which is nearly the same as in the previous year.

8. The areas irrigated were measured by the ordinary establishment employed on the canal (charged to Revenue Establishment) at a total cost of Rs. 195, or 1 anna and 2 pies per acre as compared with 1 anna per acre of the previous year, when the area measured was larger.

9. The average water-rate per acre irrigated during the year was Rs. 2.47 as compared with Rs. 2.30 of the previous year. The increase is due to the kharif areas being proportionately more than the rabi areas, for which the rates are lower.

10. The working expenses of the year as compared with those of the previous year were as follows :—

Working expenses.					
Year.	Extensions and Improvements.	Maintenance and Repairs.	Establishment, including Indirect Charges.	Tools and Plant.	Total.
		Rs.	Rs.	Rs.	Rs.
1890-91	...	4,765	1,893	4	6,662
1891-92	...	4,508	1,945	42	6,495

The rate per acre irrigated was Rs. 2.39 for the year under review against Rs. 1.76 the previous year. The increase in the rate is due to the areas irrigated being considerably less than those in the previous year. The average amount spent on silt clearance was Rs. 528 from the commencement while the length of the canal and distributaries is 51 miles, which gives a rate of about Rs. 10 per mile.

11. No reliable data can be given regarding the duty of water. The canal has been gauged for a series of years, and the result shows that at least 50 per cent. is lost by absorption and evaporation in the first ten miles, where there is practically no irrigation. The average discharge as gauged at the head during the last kharif season was 59 cubic feet per second, while the irrigated areas were 1,367 acres. This gives a duty of 23.17 acres per cubic foot, but as nearly 50 per cent. is lost in the first 10 miles, the real duty for the kharif season is about 46 acres per cubic foot of discharge against 28.5 of the previous year. In the rabi season the average discharge at the head for the year under report was 44 cubic feet per second, and the area irrigated 1,349 acres, and allowing the same percentage for loss by absorption, the result gives about 61 acres per cubic foot as against 66 acres for the previous year.

(6).—LOWER PÁNJHRA RIVER WORKS.

1. The area irrigated during the year was :—

Class of Irrigation.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Mámul bágáyat or permanent irrigation ...	1,105	610	1,715
Jiráyat land or new irrigation ...	488	400	888
Total ...	1,593	1,010	2,603

against 2,390 acres of last year, the increase being mostly in the irrigation of dry-crop land.

2. The permanent irrigation is fixed, but the irrigation of dry land depends upon the inclination and means of the irrigators, as well as on the nature of the year's rainfall. The former pays the consolidated rate for land and water, and the latter pays the crop-rates.

3. The mámul bágáyat irrigation was originally settled as dependent upon the Pánjhra River supply. Since the construction of the Mukti storage reservoir to ensure a perennial supply from the river, the water portion of the consolidated rate has been enhanced. During the year under report the tank was drawn upon in hot weather from 1st April to 19th June. The river supply was more than sufficient for irrigation purposes during the rains, but it fell down to 5.54 cubic feet per second at the end of October. The tank water had, therefore, to be let out on the 1st of November for the rabi irrigation in progress. The sluices continued open from 1st November to the end of the year, with one closure each month, varying from 3 to 8 days in duration on each occasion.

4. The value of the crops grown in the bágáyat land under the tank was Rs. 37,304. All these crops could not have been grown without the help of Mukti tank water. The crops grown in the 167 acres of bágáyat land in the inám village of Kauthal in Dhulia Taluka are included in the above valuation. Their value is Rs. 1,855. All this Kauthal irrigation has derived benefit from the Mukti tank without the inámdar paying anything in return for it, his contention being that he uses the Pánjhra River supply to which he is entitled. He states that he does not want the Mukti tank water, and that Government should keep it out of his channel. This is a very difficult thing to do, as the channel has no bandhara at its head, and is situated midway between the 9 Government channels which are fed from the Pánjhra River below Dhulia Bandhara, and are supplemented from the Mukti tank. It is practicable, however, to keep out the tank water from the Kauthal channel to a considerable extent, though not completely, and a reference to this effect has been made to the Commissioner, Central Division.

5. The question of the degradation of some of the bágáyat areas under command of the tank into jiráyat against the consent of the land-holders and without any intimation to them, alluded to in last year's report still remains unsettled, as also the question of divisions of fields into bágáyat and jiráyat without any distinguishing marks on the ground, made at the last revised survey settlement. Both the questions are under discussion between the Revenue and the Revenue Survey Departments, and final settlement may be looked for in the next report.

6. The rainfall of the year amounted to 22.54 inches, against 14.01 inches of the last year, and 23.14 inches the average of the past 17 years. Out of the total fall of rain, 22.03 inches fell from June to September in the kharif season, and 0.51 inches from October to December inclusive in the rabi season. The monsoon fall was copious in June, July and August, which made the monsoon dry-crops in new land independant of canal water. Only 10 acres of rice dodki crop were watered during rains. Rainfall in the rabi season being less, the year's rabi irrigation has been 400 acres, against 318 acres in the previous year.

7. The following table contrasts the year's irrigation in new land with that of the previous year according to the classification of crops by water-rates levied.

			Kharif.		Rabi.		Total.	
			1890.	1891.	1890.	1891.	1890.	1891.
			Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1 Perennial	...	...	82	106	...	2	82	108
2 Eight months	...	...	127	343	5	4	132	347
3 Four months	...	...	1	2	294	392	295	394
4 Monsoon	...	...	152	10	12	...	164	10
5 Hot weather	...	...	1	27	...	...	1	27
Waste of water	...	...	...	...	7	2	7	2
Total	...	...	363	488	318	400	681	888

The increase in areas is partly due to the revival of irrigation at Mandal, and partly to additional areas having been brought under irrigation at Mudhi and Nahalod, as the restriction on the irrigation of dry-land was removed this year, the tank supply being considered sufficient to meet the year's wants.

8. The assessments of the year amount to :—

	Rs.
I.—Enhanced water-rates on old bágayat lands ...	5,896
II.—Irrigation share of consolidated revenue from old bágayat lands ...	6,643
III.—Water-rates on new lands ...	3,381
IV.—Miscellaneous ...	443
Total ...	<u>16,363</u>

The average rate per acre paid by old irrigation is Rs. 7-4-11, and by new irrigation Rs. 3-12-11. The increase in the latter, as compared with the last year, is due to increase in the extent of high rated crops watered during the year.

9. The realizations amount to :—

	Rs.
I.—Enhanced water-rates... ..	5,897
II.—Irrigation share of consolidated revenue ...	6,643
III.—Water-rates on new land ...	5,034
IV.—Miscellaneous	443
Total ...	<u>18,022</u>

10. The outstandings of the year amount to :—

	Rs.
I.—Enhanced water-rates... ..	0
II.—Water-rates on new land	509
Total ...	<u>509</u>

11. There were no remissions during the year :—

12. The area applied for during the year was :—

	Acres,
Kharif	492
Rabi	395
Total ...	<u>887</u>

and the actual area assessed was :—

	Acres
Kharif	488
Rabi	400
Total ...	<u>888</u>

The difference is slight and does not require any explanation. The accuracy in the areas applied for is mostly due to water being asked for whole survey numbers and *pot* numbers, the areas of which are known and can be entered exactly in water applications.

13. The measurements of crops were carried out by the usual canal establishment, and the cost of them is calculated on the time actually spent on the work. It amounts to Rs. 52-6-0, or anna one per acre irrigated. The decrease as compared with last year is due to most of the areas irrigated being whole survey numbers or *pot* numbers as stated in the preceding paragraph.

14. The working expenses amount to Rs. 12,290 against Rs. 8,879 of last year. The increase is due to the cost of repairs to the Betavad Bandhara, the last of the series of channels supplemented by the Mukti Tank.

15. The scale of water rates is given in Appendix F of the report. It is needless to compare the revenue assessed under this scale with what it would have been under the scale which ruled before 1899, as it has been clearly shown in the previous reports that the increased rates do not, in any way, affect the irrigation in new land.

16. Special experiments were made during the year to find out the duty of water in the rabi season. A record was kept of the water actually given to wheat and pea crops in Survey Nos. 24 and 377, respectively, in the village of Nahalod. The results may be tabulated as given below:—

Village.	Survey Number.	Crops irrigated.	Area irrigated.	Number of waterings given.	Total quantity of water used.	Quantity of water used per acre.	Duty of water in acres per cubic foot of discharge during the season of 4 months (128 days).	Remarks.
			A. g.		C. ft.	C. ft.		
Nahalod.	24	Wheat	2 11	3	106,527	46,825	227	The gauges for measuring the quantity of water actually used were put up close to the fields irrigated.
	377	Pea	2 0	2	51,264	25,632	415	

17. The following figures represent the calculated loss by evaporation and absorption from the tank, after making deduction for leakage gauged below the dam:—

Khariif Season—

April to June 1891 (85 days)	...	3.77	feet.
July to September 1891 (19 days)	...	0.02	"
Rabi season, October to January 1892 (121 days)	...	1.48	"
Hot season, February to March 1892 (60 days)	...	1.16	"

Total ... 6.43 "

Average daily loss during the year ... 0.226 "

(7).—KADVA RIVER SYSTEM.

1. The works comprised in this system have been described in detail in previous reports and are as under:—

I.—*Waghda Tank* has been for seven years in partial operation, the present storage being fully one-third the sanctioned capacity. The embankment is nearly completed and the waste weir and channel alone remain incomplete. The full supply level in the Waghda Tank was artificially raised to R. L. 113 by means of an earthen dam thrown across the waste channel in the beginning of October, the storage being thus raised from 183 millions to 228 millions cubic feet.

II.—*Palkhed Canal*.—Has been in operation since 1873-74. The tail portion of the main distributary and some minor branches are not yet constructed, and need not be begun till the Waghda Tank is brought more fully into operation.

III.—*Ojhar Tambat Canal*.—An old native work improved in 1874-75. The canal was extended for a length of $2\frac{1}{2}$ miles; but the extension was not completed; the extended portion was brought into operation during the year. Further extension is deferred, as per No. II above.

IV.—*Wadali Canal*.—An old native work improved in 1869 and practically completed.

2. The tank was overflowing through the waste channel for 71 days, showing that even in years of scanty rainfall, the run off easily fills the tank.

The natural supply in the river was sufficient for all cultivation during the rains and up to the middle of January 1892. The river supply was supplemented from the tank from 1st April to 24th June 1891 during hot weather, and again from 21st January to 31st March 1892.

3. The total draw off from the tank during the above two periods was 187½ millions cubic feet, of which 145 millions cubic feet were measured as passed through the outlet, and 5½ millions cubic feet as leakage (used on the Palkhed Canal), and the remaining 37¼ millions cubic feet were lost by evaporation and absorption, making the loss during the 1st period, from 1st April to 24th June 1891, of 85 days equal to 1·84 feet in depth on the average surface, and during the 2nd period, from 21st January to end of March, of 71 days equal to ·90 feet in depth on the average surface. This apparent discrepancy is due to a small influx into the tank for some period after the rains ceased.

4. The expenditure on capital account during the year was Rs. 546 :—

(i) Wághad Tank	Rs. 429
(ii) Ojhar Támbat Canal	„ 117

(i) The earthen embankment of this tank is nearly completed, and the waste weir across the waste channel has not yet been commenced. By means of a temporary embankment across the Waste Channel water was impounded in the tank to a depth of 38 feet or ten feet less than the originally designed depth. The only work carried on during the year was a re-survey of waste channel including sinking new trial pits at waste weir site, and maintenance during construction.

(ii) Ojhar Támbat Canal—

(1) Murum road crossing in Mile No. 4 of the canal.

(2) Land compensation for the Ojhar Támbat Canal.

5. The mean rainfall during the kharif and rabi seasons, as gauged at two stations, *viz.*, Pálkhed at canal-head and Niphád near the tail was 19·07 inches, as follows, being 23 per cent. less than the average (24·79 inches) of the previous 18 years :—

	Kharif.	Rabi.	Total.	
Pálkhed... ..	20·29	1·13	21·42	} Mean
Niphád	15·05	1·67	16·72	
	<u>35·34</u>	<u>2·80</u>	<u>38·14</u>	

6. The area irrigated during the year under the (three) canals was 2,971 acres, as compared with 2,570 acres applied for. The difference is due to the areas in applications being only approximate.

7. The following table shows—

(1) the area irrigated and assessment of each canal during the year and

(2) similar average figures of the previous four years.

1891-92.

Canals.	AREAS.			ASSESSMENT.		
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pálkhed Canal	596	1,727	2,323	3,343	4,662	8,005
Ojhar Támbat Canal	76	175	251	406	480	886
Wadáli Canal	179	218	397	737	530	1,267
Total	851	2,120	2,971	4,486	5,672	10,158

Average of four years, 1887 to 1891.

Canals.	AREAS.			ASSESSMENT.		
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pálkhed Canal ...	930	855	1,785	4,469	1,761	6,230
Ojhar Támbat Canal ...	153	98	251	647	192	839
Wadáli Canal ...	122	189	311	397	383	780
Total ...	1,205	1,142	2,347	5,513	2,336	7,849

In addition to the areas shown above, 326 acres under the Wadáli Canal were assessed as irrigated under "Mámul bágáit," the annual irrigation share for which amounts to Rs. 2,241, giving an average water (assessed) rate of Rs. 6-14-0 per acre.

Statement of water assessment per cubic foot per second.

Canals.		AMOUNT OF ASSESSMENT PER CUBIC FOOT PER SECOND.												
		At head.				Utilized.								
		Kharif.			Rabi.	Kharif.			Rabi.					
		A.	g.	a.	A.	g.	a.	A.	g.	a.				
Pálkhed Canal	...	...	207	10	2	246	12	9	409	10	10	362	12	9
Ojhar Támbat Canal	...	...	211	7	4	231	14	1	520	8	2	345	5	2
Wadáli Canal	...	...	238	8	2	106	10	2	413	12	0	194	2	2

Note.—The revenue derived per cubic foot per second is not very large. This is due to much of the land irrigated consisting of small patches more or less isolated from each other.

8. The area irrigated in 1891-92 is 33 per cent. more than that of the previous year, and 26 per cent. more than the average of the previous four years.—The decrease in the kharif area on the Pálkhed and Wadáli Canals was due to a large area of eight months' crops remaining to be irrigated after the kharif season, and to a very small area of monsoon dry-crops irrigated owing to favourable rains which fell after June.

(a) Increase in the rabi area on the three canals was due to want of rains during October.

(b) There is an increase in the kharif and rabi area on the Ojhar Támbat Canal, and a further increase may be expected year by year.

9. The principal crops for the year are shown below, with average figures for the five preceding years :—

Name of Crops.	For the year 1891-92.	Average of the 5 preceding years.	Increase.	Decrease.
Wheat ...	1,035	515	520	...
Ground-nut ...	971	569	402	...
Gram ...	*201	147	54	...
Sugarcane ...	266	299	...	33

* Exclusive of urid and mug.

10. There is a large increase in the area of wheat and ground-nut during the year,—that in the former is due to want of rainfall during the latter part of the monsoon, *i.e.*, in October, and that in the latter is attributable to the high price at which it was sold last year.

There is a small increase in the area of sugarcane in comparison with last year and further increase is expected in future.

11. The total maintenance charges on the (three) canals during the year amounted to Rs. 8,430, divided as follows :—

	Rs.
I—Maintenance and Repairs	4,466
II—Establishment	3,078
III—Tools and Plant	75
IV—Share of collection charges	380
V—Indirect charges	431
Total	8,430

The increase principally on establishment is Rs. 394. It is due to the share of revenue establishment debited.

12. The total assessment during the year amounted to Rs. 10,435 (including assessment Rs. 28 on alluvial land above Palkhed Canal), and the total realizations to Rs. 7,845. The outstandings (Rs. 6,618) at end of the year are accounted for as under :—

	Rs.
(1) Rabi assessment to be sent for realization after the close of the year	5,672
(2) Balance of the current year's kharif assessment (including the balance Rs. 36 on account of assessment on alluvial land for 1891-92)	946
	6,618

Besides direct water-rates, revenue is also obtained from the following sources :—

	Rs.
(1) Plantations and other canal produce	219
(2) Rent of buildings	30
(3) Alluvial (<i>Gálper</i> land)	28
(4) Enhancement of land assessment	594

13. The total cost of crop measurement, &c., is given as below :—

Name of Canals.	Area measured.	Total cost of measurement.
Palkhed Canal	2,323	167
Ojhar Tambat Canal	251	23
Wadali Canal	397	38

or one anna and pies three per acre irrigated.

14. The duty of water on the canals varied from 20 to 30 acres during the kharif season and 80 to 150 acres during the rabi season. Observations for ascertaining the quantity of water required to mature ground-nuts have been taken and the results are as shown below :—

Name of crop.	No. of water-ing.	Area irrigated in acres.	Cubic feet of water required to mature.	For what period the water was given.	Remarks.
Ground-nut ... {	4	1	36,067	16th July to 31st December 1891.	Water was not taken during August and September 1891 on account of rains.
	4	1	41,899	13th July to 20th December 1891.	

15. *Leakage experiments.*—Two experiments, one in each season, were made on each of the three canals. On the Palkhed Canal there was a loss by leakage and evaporation, &c., of nearly 40 per cent. of the supply during the kharif and of 32 per cent. of the supply during rabi.

- (a) On the Ojhar Támbat Canal there was a loss of nearly 29 per cent. and 33 per cent. of the supply during kharif and rabi respectively.
- (b) On the Wadálí Canal the loss during kharif and rabi was 43 per cent. and 45 per cent. of the supply respectively.
- (c) The loss by leakage and evaporation has been reduced over that of the preceding years in consequence of the canal being cleared of silt to the extent shown above.

16. *Canal closures.*—There were 11 closures in all during the year for silt and aquatic plants clearance. Of these 7 were on the Palkhed Canal and 4 on the Wadálí Canal, aggregating 31 and 18 days respectively.

17. The total number of trees standing on the canals at the close of the year was 11,952. Of these the principal were as under :—

Names of trees.		Number of trees.	Remarks.
Bábúl	...	9,414	
Mango	...	756	
Nimb	...	499	
Moho	...	635	
Total	...	11,304	

The expenditure during the year was Rs. 202 from revenue account. The total expenditure to date is Rs. 3,526.

(8).—PRAVARA RIVER WORKS—LAKH CANAL.

1. The area irrigated during the year was 508 acres, of which 302 were kharif and 206 were rabi crops. The total shows an increase of 74 acres on the area of the last year, and this is due to scarcity of rainfall in rabi season and to the extended length of canal in operation:

Comparison of area applied for and irrigated. 2. The following statement compares the area applied for and irrigated during the year :—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1891-92.	448	302	231	206	679	508	146	25	171

The difference is due to timely rainfall in kharif season.

The area applied for but not irrigated is 34 per cent. of the area irrigated.

Water rate assessments.

3. During the year the water rate assessments, excluding remissions, amounted to Rs. 1,508 detailed as below :—

					Ra.
Kharif	...	...	...	...	1,057
Rabi...	...	...	...	...	451

There is, therefore, an increase of Rs. 258 or 21 per cent. over last year's assessment of Rs. 1,250.

4. Remissions amounting to Rs. 202 have been granted during the year, as the crops suffered owing to the failure of river-supply during the hot weather.

5. The incidence of water rate per acre was Rs. 2·97 against Rs. 2·88 in the previous year, due to the increase in area of perennial crops.

6. The capital expenditure during the year amounted to Rs. 150 in completing the work of Malunja Bungalow, unfinished at the end of the last year.

7. The working expenses of the year were as follows :—

			Rs.
Maintenance and Repairs	...	...	1,696
Share of Establishment	...	...	1,085
Tools and Plant	...	...	44
Share of collection charges	...	...	77
Indirect charges	...	...	152
Total			3,054

Those of the last year amounted to Rs. 3,598. The rate of working expenses this year per mile of main canal open is Rs. 133, and per acre irrigated is Rs. 6·01.

8. The old water rates were brought into force in 1889-90.

9. The total cost of measuring 508 acres during the year was Rs. 56 or 1 anna and 9 pies per acre, against Rs. 71 or two annas and seven pies per acre last year.

10. The duty of water per cubic foot per second varied on the average from 6 to 37 acres in the hot weather, from 3 to 9 acres in the monsoon, and from 16 to 82 acres in the rabi season.

The cause of poor duty of water in the monsoon is that much water is wasted by leakage from canal in 9th to 13th mile, as the line runs through murum, and consequently a large discharge is required at the canal head in order that it may reach the tail; the area under irrigation was also small.

11. The rainfall during the year as gauged at Malunja was kharif 14·33, rabi 2·69, total 17·02 inches, or 7·90 inches less than the average during the last five years.

12. The river supply was abundant in the monsoon and cold weather. It began to fail in the middle of November, when an earthen dam, 2 feet high, was put on top of the weir as usual to increase the storage during the hot weather. The river ultimately failed on 30th May, and the canal was dry for 20 days in June. On 21st June the river was in flood.

13. At the end of the year the number of trees on this canal was 17,985. The number of principal kinds were :—

Bábul	...	12,180	Tamarind	...	38	Siris	...	14
Nimbhara	...	64	Sandal	...	19	Bakan	...	74
Nimb	...	2,288	Mango	...	603	Bambu	...	282
Melingtonia	...	27	Jambhul	...	943	Moho	...	3
Bore	...	501	Divi Divi	...	19	Miscellaneous trees	...	930

The total number last year was 18,097. The reduction in the number of mango, bábul, nimb and jambhul trees is due to the attack of white ants, and to strong winds blowing down a number of trees.

14. One work is greatly required on this canal, *viz.*, proper regulating outlets fitted with locks. At the present time cultivators can steal water when Patkaries are not actually walking up and down the canal, and this is constantly done. Also with proper outlets the distribution of water in turn can be made, whereas without proper arrangement people at the upper end of the canal are able to take off water on wrong days and then the cultivators lower down get a short supply. Estimates for the outlets were submitted some time ago.

(9).--MUTHA CANALS.

1. The maximum flood in Lake Fife during the year occurred on 23th July 1891, on which date the water rose to a height of 5.10 feet above the finished or permanent crest of the waste weir, and at this level the water surface was within 5.90 feet of the top of the dam.

This flood level is 0.10 feet higher than the estimated maximum flood, and 0.30 feet higher than the flood of 7th July 1882, which was the highest then recorded.

At the commencement of the year (1st April 1891) the level of water in the lake was 18.55 feet above the sills of the canal sluices; the minimum level was reached on 2nd July, when the depth of water was only 5.98 feet above the same points. Owing to rain falling in the ghâts the water began to rise rapidly from 3rd July, and flowed over the waste weir on 17th July 1891, and the overflow was continuous from that date up to the period in which the standards and planks were fixed for the purpose of increasing the storage. The iron standards and first row of planks were fixed in positions on the crest of the waste weir on 26th August, and subsequently others were added. The temporary weir was topped by a flood of 3.75 feet above the finished portion of waste weir on 28th September, and was partially displaced by it, some of the boards rising as much as 9". Owing to this water had to be let out to nearly the top of the waste weir, and there being no good rain in October, water was only stored on 14th of that month up to a height of 32.00 feet above the sill of the sluices, *i.e.*, nearly 3.00 feet above the permanent weir crest level, or 0.01 more than the previous year.

The expenditure of water from the storage commenced on 17th October; the water level reached the permanent or finished weir crest level on the 16th November 1891 and at the close of the year (31st March 1892) stood at 13.44 feet above the sills of the canal sluices, or 5.09 feet lower than on the corresponding date of last year.

Assessments of revenue.

2. During the year under review the assessments amounted to Rs. 2,63,631 detailed as follows:—

	Rs.
Water rates	1,52,451
Sales of water	1,797
Water-supply of towns	1,00,727
Plantation and other canal produce	1,544
Water-power	3,600
Rents of buildings	142
Miscellaneous	3,370
Total	2,63,631

The total amount of assessments in the previous year was Rs. 2,07,159; there is, therefore, an increase of Rs. 56,472, or 27.26 per cent., principally in water rates, but partly also in water-supply of towns. The increase in water rates is due to general extension of irrigation in kharif crops; larger area also of high rated and rabi crops, due in the latter to unfavourable rainfall.

3. The area irrigated during the year was 14,061 acres, of which 7,877 were kharif and 6,184 rabi crops. The total shows an increase of 2,860 acres, or 26 per cent. above the area irrigated in the previous year.

4. The revenue derived from water-supply of towns amounted to Rs. 1,00,727, showing an increase of Rs. 14,791 on that of the previous year; and is due to the fact that there has been an increase of Rs. 5,446 received from the city municipality for the extra quantity taken for the supply to the city, and about Rs. 5,000 due to larger supply taken for several houses and bungalows in the cantonment, and additional number of attachments. 305,806,911 gallons of water were supplied from the canal for the Poona City water-supply at a charge of Rs. 16,011; Rs. 10,000 of this sum being the fixed charged leviable for any quantity taken, not exceeding 750,000 gallons a day, and the remainder Rs. 6,011 for water taken in excess of that amount at the rate of 3 annas per 1,000 gallons.

5. The average daily consumption of water in the cantonment and civil station of Poona was 848,356 gallons during the year. Taking the population at 32,247 as per census of February 1891, the average consumption per head per diem comes to 26·3 gallons. The increase in consumption per head is due to a large extent to the short rainfall, owing to which more water was used for gardens than usual.

6. The working expenses of the year amounted in all to Rs. 84,858, of which Rs. 51,312 are debitable to the maintenance of irrigation and Rs. 33,546 to the maintenance, &c., of the water-supply; the latter amount includes expenditure incurred in pumping done by steam and water power.

The cost of the maintenance of the irrigation works, Rs. 51,312 against Rs. 43,066 in the previous year, represents a rate for maintenance, administration, &c., of Rs. 553·09 per mile of main canal, opened and Rs. 3·65 per acre irrigated.

7. Deducting the total working expenses (Rs. 84,858) and Rs. 685, the amount of remissions and refunds, from the total earnings (Rs. 2,63,631), the net profit from the work amounts to Rs. 1,78,088, or 2·82 per cent. on Rs. 63,07,228, the total entire capital outlay to the end of the year.

8. The areas irrigated were ascertained by actual measurements, the greater part of which were taken by measurers specially entertained for the purpose, and the remainder by an Inspector, when time could be spared from his ordinary work; and from 9 to 12 per cent. of the area was checked by the subordinate in charge.

The cost of measurements amounted to Rs. 1,295, or at the rate of 1 anna and 6 pies per acre.

9. The highest duty of water during the month, in which no rain fell, was obtained in February, when the area irrigated was 6,706 acres and the average discharge 91·48 cubic feet per second, giving a duty of 93·3 acres per cubic foot per second; and the lowest was in May, when the area irrigated was 5,106 acres and the average discharge 112 cubic feet per second, giving a duty of 44·69 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for other seasons owing to rain having fallen and the canals being single banked.

10. The rainfall of the year along the canal varied considerably. The maximum was 17·60 inches at Poona and the minimum 8·63 inches at Uruli as under :—

Rainfall.

	Kharif.	Rabi.	Total.
Poona Sassoon Hospital ...	14.19	3.41	17.60
Uruli ...	4.10	4.53	8.63

11. The characteristics of the rainfall last year were that the monsoon set in late at Khadakvasla, *i.e.*, not till the beginning of July, consequently the Lake Fife was not filled till the 17th July. There was also no rain in November and December, which resulted in great demand for water for rabi crops, consequently no applications for new sugarcane were taken except on leakage water.

12. A statement is appended giving the particulars of the water issued gratis or at reduced rates to various institutions in accordance with the orders issued by Government from time to time. From it it will be seen that local institutions have received water during the year at Rs. 5,711 less than the normal rates. If this amount be added to the net revenue shown in paragraph 7 *ante*, making the total net revenue Rs. 1,83,799, the percentage of net revenue on total capital expenditure becomes 2.91.

13. The following is the comparison of area as applied for and those actually irrigated:—

	AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
	Acres*	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mutha Right Bank Canal ...	7,255	7,130	14,385	7,192	5,787	12,979	...	...	63	1,343
Mutha Left Bank Canal ...	819	396	1,215	635	397	1,032	...	1	134	...
Total ...	8,074	7,526	15,600	7,877	6,184	14,061	...	1	197	1,343

The falling off in the irrigated area, as compared with the applications, was due to applications having been sent in late in large numbers, and before water could be given to all, the crops failed.

14. Remissions amounting to Rs. 52 have been granted during the year on account of erroneous assessments.

15. Refunds amounting to Rs. 633 were made during the year, of which Rs. 21 are on account of erroneous assessments and Rs. 612 rebate given to Indian Paper Mills Company for 62 days, that is, 43 days being short of 60 horse-power and 19 days canal closure.

16. At the end of the year the number of trees on the Right and Left Bank Canals and on the head works, &c., was 61,734. The number of principal kinds were:—

Bábul	...	...	...	46,648
Jámbul	...	...	...	774
Bor	...	...	...	883
Shindi	...	...	...	3,657
Mango	...	...	...	3,404
Bámbu	...	...	...	605
Umbar	...	...	...	419
Nimb	...	...	...	1,352
Sandal	...	...	...	335
Hiwar	...	...	...	521
Soundad	...	...	...	874
Tamarind	...	...	...	341

The number of miscellaneous trees was 1,924.

17. Observations to ascertain the loss by evaporation and leakage on the Mutha Right Bank Canal were made on 4th and 5th February 1892, with the following result :—

Discharge at head	...	...	...	211·91
Discharge at 28½ miles	...	...	...	101·11
Loss by leakage and evaporation	...	...	...	110·80
Do. do. per mile	...	...	...	3·9

No gaugings were taken on the Left Bank Canal.

18. Gaugings to ascertain evaporation and leakage were taken for broken periods in the months of April, May, June, July, November and December 1891 and January, February and March 1892, or a total number of days 232. During this period the loss amounted to 301,616,915 cubic feet, or $\frac{1}{10}$ th nearly of the total capacity of the lake above outlet level.

POONA WATER-SUPPLY.

Statement showing Water-supply given gratuitously or at reduced rates during 1891-92.

To whom supplied.	Quantity supplied.	Amount paid.	Value at 6 annas per 1,000 gallons.	Difference between 4 and 3.	Remarks.
1	2	3	4	5	6
	Gallons.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
The Civil Surgeon, Sassoon Hospital ...	858,600	160 9 7	321 3 2	160 9 7	
Do. do. ...	554,941	104 0 8	208 1 4	104 0 8	
The Superintendent, B. J. Medical School.	466,460	87 7 4	174 14 8	87 7 4	
The Superintendent, Lunatic Asylum ...	537,260	100 11 9	201 7 6	100 11 9	
The Secretary, Cantonment Committee (New Modikhāna)...	1,191,542	223 6 6	446 13 0	223 6 6	
Do. do. (Beef Market)...	1,322,994	248 1 0	496 2 0	248 1 0	
Do. do. (Malcolm Tank).	1,338,329	250 15 0	501 14 0	250 15 0	
Do. do. (Mutton Market)...	1,338,329	250 15 0	501 14 0	250 15 0	
Do. do. (Ashurkhāna)...	1,460,000	273 12 0	547 8 0	273 12 0	
* Do. do. (Butler Mohlla)...	1,460,000	273 12 0	547 8 0	273 12 0	
Convent School	223,608	41 14 8	83 13 4	41 14 10	
Jamsetji Fountain	1,095,000	.....	410 10 0	410 10 0	
Howds in Booty Street.	4,380,000	.....	1,642 8 0	1,642 8 0	
Bazar Reservoir	1,460,000	.....	547 8 0	547 8 0	
Malcolm Tank	2,920,000	.....	1,095 0 0	1,095 0 0	
Total ...				5,711 3 6	

The savings to the Military and other Departments on account of the difference between the amount formerly expended by them on account of their water-supply under the old system and the amount paid by them last year to the Irrigation Department in water-rates amounted to Rs. 20,484 against Rs. 22,854 last year. The difference is due to increase in the amounts of water-rates, viz., Rs. 1,887 in the Military Department and Rs. 434 in the Civil Department.

(10).—EKRUK TANK.

21

Statement showing Savings to Government through the introduction of Mulha Canal Water into the Poona Cantonment for the year 1891-92.

		ANNUAL COST OF 1891-92.								REMARKS.
Number.	Item.	Bhisti Estab- lishment prior to water- supply.	Bhisti Estab- lishment after water- supply.	Bhisti Saving.	Water rates.	Saving.	Excess.			
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.			
Military Department.										
1	Controller of Military Accounts ...	254 0 0	.....	254 0 0	121 0 3	142 15 9	.....			
2	Ordnance Department ...	254 0 0	.....	254 0 0	133 11 0	141 6 0	.....			
3	Executive Commissariat Office, Bakery, Storeyard and Depot Transport Office Government Cattle Farm at Wanorle	1730 14 1	.....	1,730 14 1	2,609 13 1	.....	273 15 0			
4	Military Prison ...	307 0 0	.....	307 0 0	188 15 0	175 1 0	.....			
5	Staff Hospital ...	312 0 0	.....	312 0 0	250 13 4	61 2 8	.....			
6	Quartermaster General's Office ...	103 0 0	.....	103 0 0	92 0 11	100 6 1	.....			
7	European Regiment at Wanorle ...	5,328 0 0	.....	5,328 0 0	95 12 11	.....	65 12 11			
8	Do. at Ghorpari ...	20 0 0	.....	20 0 0	4,774 9 10	.....	360 9 10			
9	Do. at Ghorpari ...	5,054 0 0	.....	5,054 0 0	4,524 15 11	.....	300 15 22			
10	Native Light Cavalry, including Hos- pital ...	634 0 0	.....	648 0 0	2,186 0 11	.....	2,219 0 11			
11	R. F. N. I. Line and Hospital ...	1,115 8 0	.....	1,115 8 0	3,274 7 8	.....	3,096 6 8			
12	L. F. N. I. Line and Hospital ...	1,060 0 0	.....	1,060 0 0	4,341 6 0	.....	4,173 6 0			
13	Centre N. I. Line and Hospital ...	1,080 0 0	.....	1,080 0 0	2,537 12 6	.....	2,786 12 6			
	Rest Camp ...	.....	.....	.....	.....	.....	.....		No water was given to Rest Camp during the year.	
	Total Military Department ...	17,590 8 1	5,308 8 0	12,282 0 1	24,990 0 4	633 14 6	13,271 14 9			
Civil Department.										
1	Photodupco Office ...	72 0 0	.....	72 0 0	164 2 3	.....	92 2 8			
2	Lunatic Asylum ...	180 0 0	.....	180 0 0	100 11 9	79 4 3	.....			
3	Post Office ...	36 0 0	.....	36 0 0	72 2 1	.....	36 8 1			
4	Executive Engineer, Poona District, Bund Garden.	720 0 0	.....	720 0 0	470 14 3	249 1 9	.....			
5	Executive Engineer, Poona and Kirkee (now Military Works, Poona District), Wanorle, Store and Office.	42 0 0	.....	42 0 0	71 4 8	.....	29 4 8			
6	Sassoon Hospital ...	576 0 0	.....	576 0 0	264 10 3	311 5 9	.....			
7	Superintendent of Police ...	60 0 0	.....	60 0 0	196 9 7	.....	136 9 7			
8	Executive Engineer Poona and Kirkee (now Military Works, Poona District), Wanorle Store-wards.	21 0 0	.....	21 0 0	12 4 11	8 11 1	.....			
9	Executive Engineer Poona District (Council Hall).	144 0 0	.....	144 0 0	496 15 10	.....	352 15 10			
10	Do. do. Storeyard ...	51 12 0	.....	51 0 0	40 13 9	10 14 3	.....			
11	College of Science ...	240 0 0	.....	240 0 0	500 0 0	.....	260 0 0			
12	Judge's Court ...	144 0 0	.....	144 0 0	190 16 11	13 0 1	.....			
	Total Civil Department ...	2,286 12 0	.....	2,286 12 0	2,531 15 2	872 5 2	907 8 5			
	Total Military Department ...	17,590 8 1	5,308 8 0	12,282 0 1	24,990 0 4	633 14 6	13,271 14 9			
	Total Civil Department ...	2,286 12 0	.....	2,286 12 0	2,531 15 2	872 5 2	907 8 5			
	Saving to Public Works Department on account of Bund Engine.	33,367 0 0	.....	33,367 0 0	.....	33,367 0 0	.....			
	Savings to Government on account of water given to India's Aqueduct, as per Government Resolution No. 466 of 19th December 1892.	.....	.....	.....	.....	.....	.....		No water was given to India's aqueduct during the year.	
	Total ...	52,244 4 7	5,308 8 0	47,935 13 1	27,451 15 7	34,063 3 8	14,179 7 2			
					Deduct Excess ...	14,179 7 2				
					Total Saving ...	20,463 12 6				

(10).—EKRUK TANK.

The rainfall for the year under report gauged at Hiperga was 22.51 inches against 22.99 inches during the previous year, and that at the Sholapur observatory, which is shown in the comparative statement of irrigation and rainfall, was :—

	1890-91.	1891-92.
Kharif ...	18.36	17.45
Rabi ...	9.06	5.45
Total ...	27.42	22.90

The water surface rose to R. L. 204.50 or 0.50 above the waste weir level, and the supply was more than enough for all purposes.

2. The area irrigated during the year was as under:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1891-92	1,935	1,202	3,137
1890-91	1,836	763	2,599

This represents an increase of 99 acres of kharif and 439 of rabi, or 538 in the total on the area irrigated during the previous year. The increase in kharif is due mainly to a development of irrigation and that in rabi to want of favourable rains.

3. The main cause of the slow development of irrigation on these canals is, as has been reported frequently, their incapacity to carry the required supply of and the further reduction of their capacity by the deposit of silt during the rains. The supply reaching the tail being necessarily scanty and precarious, the cultivators dare not undertake to grow rich and costly crops on account of the risk that it involves.

4. The perennial canal will carry the required discharge after the special improvements have been carried out, and it is expected that with sufficient supply in the canal, irrigation will rapidly increase.

5. The left bank high-level canal is only four miles in length, and although there is no bank on the upper side, the silt that is washed into it during the rains can be easily removed and the canal made workable. However, it would be highly advantageous and economical if the monsoon floods are prevented from entering the canal by throwing a bank on the upper side or by providing cross drainage.

6. The right bank high-level canal is the most troublesome of all. Year after year it gets silted up, and with the annual grant for this canal it is barely possible to keep it working; where water is available it is not used. It is, therefore, recommended that the canal be closed.

7. It was reported last year that the Shelgi aqueduct provides insufficient water-way for the passage of floods, and in consequence the bed of the nála has been scoured out to below the foundations, and that there is danger of a sudden collapse. Subsequently the pit was measured, and it is found that it had not gone below the foundations just at the aqueduct but at a distance of about 10 feet below the aqueduct. There is, therefore, no danger of a collapse. However the pit is widening year by year and cutting into the ground below the canal approaches, and every time the dry stone wing walls are washed into the pit they require to be renewed. To remedy this the pit has to be filled up, at least near the ends of the aqueduct, so as to afford a firm base for the canal approaches and dry stone wings.

8. The area applied for and shewn in the irrigation operation statements and that actually irrigated are shown below:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Applications... ..	1,574	1,089	2,663
Actually irrigated	1,935	1,202	3,137

The discrepancy between applications and actuals is due to the inability of the cultivators to estimate even roughly the area they mean to irrigate.

9. The assessment during the year from all sources amounted to Rs. 27,470; of this the water rates alone were Rs. 13,125 against Rs. 10,187 of the previous year, representing an increase of Rs. 2,938.

10. The incidence of water rate per acre irrigated was 4.18 against 3.91 for the previous year.

11. The irrigated area was measured by a measurer and three khalásis, and the measurements checked by the sub-divisional officer to the extent of 10 per cent; the cost of this amounted to Rs. 492, or Re. 0-2-6 per acre irrigated, and will be the same should the irrigated area be more.

12. The working expenses, direct and indirect, amounted to Rs. 13,770, the collection charges to Rs. 619, their difference representing the net expenditure incurred by the department.

13. As noticed in paragraphs 3 to 6 *ante*, large quantities of silt are deposited in the canals, and the canal-banks damaged to a great extent during the monsoons, and in consequence the annual charges for maintenance and repairs do not admit of any reduction without a corresponding reduction of their utility.

14. Owing to the proximity of Sholápur to the tank and canals, the plantations form an important source of revenue. The bábul tree grows plentifully along the tank margin, and the canal requires little care or expense and brings in a good revenue. It is principally used for fuel and ordinary carpentry.

The fruit trees have not yet begun to yield any considerable revenue.

The expenditure on plantation amounted to Rs. 977 or 13·84 per cent. of the revenue under this head, *viz.*, Rs. 7,057. The trees above and below 5 feet in height numbered 59,000 and 76,532 respectively on the 31st of March 1892.

15. The following statement shows levels of water, acreage, assessment, &c., of Ekruk Tank for the year 1891:—

	Average Discharge during the year.	AREA IRRIGATED.						REDUCED LEVEL OF WATER ON 5TH JUNE.		Remarks.
		Kharif.		Rabi.		Total.		Reduced Level.	Height of Water over Sill in feet.	
		Area.	Assessment.	Area.	Assessment.	Area.	Assessment.			
Left Bank Low Level Canal	24'45	1,356	7,007	681	2,292	2,267	9,290	1,614·257	30'87	The waste weir did not flow this year.
Do. High Level Canal	3'08	291	1,764	86	525	377	2,290		6'04	
Right Bank High Level Canal	8'56	253	964	235	572	403	1,536		6'10	
		1,984	9,735	1,202	3,390	3,187	13,125			

16. The canals were regularly gauged, and observations of the velocities made for the purpose of determining the duty of water, the results of which are shown in the following table. In calculating the duty on the perennial canal the quantity of water supplied to the Municipality, Spinning and Weaving Mills and the G. I. P. Railway Company has been left out:—

Name of Canal.	Average discharge in cubic feet per second.	AREA IRRIGATED.						IRRIGATION DUTY.	
		12 months.	8 months.	4 months.	2 months.	Hot weather.	Total.	1891-92.	1890-91.
P. Canal	24'45	456	615	800	335	61	2,267	92'72	73'0
Right Bank Canal	3'08	26	170	221	69	7	493	160'07	83'7
Left Bank Canal	8'56	162	75	69	45	26	377	44'16	34'28

This increase of irrigation duty as compared with that of 1890-91 is due in part to the increased rabi irrigation for want of favourable rains.

17. Some of the distributing channels had gauges fixed and the quantities of water required to mature different kinds of crops are given below:—

Name of Crop.	Area irrigated.	Cubic feet of water required to mature the crops.	Remarks.
	Acres.		
Pansali	1	153,910	During hot weather, 31st January to 30th May, 1891-92.
Do.	1	81,378	During rainy season, 12th July to 21st December 1891.
Sugarcane	1	403,956	12th February to 31st January 1892.
Groundnut... ..	1	21,521	30th June to 5th November 1891.

18. During the year only one rain-gauge was maintained at the tank and attended to by the kárkún on the tank. The rainfall from June to October was 22·51, representing 8,315, millions of cubic feet on the catchment area, viz., 159 square miles. The run-off is ·15 of the total rainfall.

21. The following gives the loss due to evaporation and absorption :—

Total quantity of water for use in the tank during the year	C. ft.	C. ft.
		3,630,539,439
Total quantity discharged through the canals and by leakage	646,692,076	
Actual quantity in Tank on 31st March 1892	2,090,143,407	
		<u>2,736,835,483</u>
Quantity lost by evaporation and absorption		<u>893,703,956</u>

(11).—KRISHNA CANAL.

The Government of India directed that the capital account of the canal should be closed at the end of March 1892. Orders to proceed with the works were received in Government Resolution No. 144 A. I.—1829, dated 23th October 1891, and an additional grant of Rs. 29,600 was made.

2. Some minor works for which sanctions to plans and estimates was received were carried out at a cost of Rs. 4,732, and the remaining works were in progress.

3. The rainfall of the year as gauged in the 15th mile of the canal was 16·65 inches (kharif 11·33 and rabi 5·32) against 25·87 inches in the previous year and 26·44 inches, the average of the past 10 years for the two seasons.

4. The area irrigated was 3,259 acres of kharif and 2,115 acres of rabi, total 5,374 acres. The table below compares the area irrigated during the year under report with those of the previous four years :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1887-88	1,507	1,055	2,562
1888-89	1,919	1,456	3,375
1889-90	1,667	2,065	3,732
1890-91	1,736	2,214	3,950
1891-92	3,259	2,115	5,374

5. The area irrigated was 21 per cent. of the irrigable area under command; and the measured area was 12 per cent. in excess of that applied for.

6. The total water-rate assessments of year amounted to Rs. 39,262. The following table compares the assessments during the year with those of the previous four years :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1887-88	19,319	3,860	23,179
1888-89	22,268	5,236	27,504
1889-90	22,241	7,365	29,606
1890-91	23,630	9,077	32,707
1891-92	32,962	6,300	39,262

7. The area irrigated and the assessments of the year were not only considerably in excess of those in the previous year, but were the highest on record since the canal has been in operation. The extraordinary increase in kharif was due to the greater demand for water in consequence of deficient and unseasonable rainfall as well as to economical management in the distribution of water.

8. The principal increase was in rice and jowári (staple food grains of the district) and also in sugar-cane and ground-nut.

9. Although the increased water-rates were sanctioned in 1889-90 the comparison of the past four years shows that there was not only no falling off in either area irrigated or revenue, but on the contrary the steady increase commented on in last year's report was continued. The total of the assessments during the year under report was 20 per cent. in excess of that of the previous year, which in its turn was $10\frac{1}{2}$ per cent. in excess of the year before.

10. The revenue from all other sources amounted to Rs. 1,708 (Rs. 1,365 from plantations alone) bringing the gross revenue of the year to Rs. 40,970.

11. The working expenses including direct and indirect charges amounted to Rs. 11,101 showing a decrease of Rs. 2,186 or 16 per cent. less than the figures of the previous year. The working charges for the year represent a cost of Rs. 182 per mile of canal and distributaries open and Rs. 2.07 per acre irrigated, against Rs. 218 per mile of canal and Rs. 3.36 per acre irrigated during previous year. The percentage of working expenses to gross revenue was 27 as compared with 38 in the year before.

12. After deducting working expenses from the gross revenue there was a net profit of Rs. 29,869, equal to a rate of 3.7 per cent. on an outlay of Rs. 8,02,087 for direct charges.

13. The average water-rate for the year per acre irrigated was 7.31, as compared with 8.28 in the year before. The low incidence during the year under report was due to the increase in the area of low-rated crops.

14. The cost of measurements was Rs. 549, or equal to the rate of one anna seven pies per acre irrigated, which was the same as that in the previous year.

15. The maximum duty of water performed on this system of canal was 65 acres per cubic foot per second in September 1891 and minimum 30 acres in May 1891.

16. The number of trees of all classes on the canal at the end of the year was 23,984, and in addition there were 1,500 saplings, bringing the total to 25,484. The number of trees cut and sold during the year was 464, realizing a sum of Rs. 1,207, and the total expenditure on plantations during the year under report amounted to Rs. 417.

MINOR WORKS AND NAVIGATION.

(12).—KHARI CUT.

1. The rainfall during the year was 25.63 inches in the kharif and 0.02 cents. in the rabi season against 22.75 inches in the kharif season of the previous year, the average of the last five years being 22.60 inches and 0.97 inches in the kharif and rabi seasons respectively. The Chandola Tank, which is the main

storage reservoir of the irrigation was full by the end of July allowing a larger area being brought under rice cultivation than in the previous year, but owing to scanty rainfall in September, the crop suffered for want of water and large remissions had to be granted.

2. The area irrigated during the year as compared with that in the previous year was as follows:—

					• Kharif
1890-91	...	...	...	...	1,325
1891-92	...	...	...	...	1,474

3. The assessment, excluding remissions and free grants (the former amounting to Rs. 2,172 and the latter to Rs. 1,684) were Rs. 5,754 as compared with Rs. 6,078 of the previous year.

4. The working expenses of the year amounted to Rs. 3,873 against Rs. 4,138 of the previous year, the rate per acre being Rs. 2·63 as compared with Rs. 3·12 the previous year.

5. The area under irrigation was measured by the establishment specially employed for the purpose at a total cost of Rs. 141 or 1½ anna per acre.

6. The average water-rate during the year was Rs. 3·90 per acre as compared with Rs. 4·58 of the previous year.

7. The actual supply abstracted from the Khari river during the kharif season at the head of the Khari Cut was 12 cubic feet per second and the area irrigated was 1,474 acres plus the area assessed on the Chandola Tank (viz. 242 acres) making a total of 1,716 acres which gives a duty of 143 acres per cubic foot of discharge.

(13).—HARTALA TANK.

1. This tank has been in operation for the past 19 years.

2. The storage of the monsoon of 1890 lasted till the 9th March 1891, so that at the beginning of the year under report the tank was empty, and consequently there has been no perennial or hot weather irrigation under it. The tank had its first replenishment on 24th July 1891, and it nearly filled on the 20th of October 1891, the storage amounting to 130·98 millions cubic feet against the full storage capacity of 134·90 millions cubic feet. This storage was sufficient to water the whole irrigable area under command, viz., 415 acres, but only a little more than 34 per cent. of this area was watered in the rabi season.

3. The rainfall gauged at the dam site of the tank amounted to 32·66 kharif and 3·00 rabi, total 35·66 inches during the year, against 29·69 inches of the previous year, and 23·63 inches the average of the past 18 years. The average fall inclusive of the year's rain amounts to 24·27 inches. The year's rainfall is the second best on record in the history of the tank, and was useful for tank filling. In the kharif season the rainfall amounted to 32·66 inches against 27·91 inches of the previous year, which of course made the kharif crops independent of canal water. The rabi rainfall was also favourable, being 3 inches against 1·78 inches of the previous year, but being late in the season it was not very serviceable to rabi crops.

4. The area irrigated during the year was nearly 34 per cent. of the area irrigable from the tank being 2 acres kharif, and 140 acres rabi, total 142 acres, against 60 acres in the previous year of less rainfall and less storage in the tank. The fluctuating storage in the tank shakes the confidence of the people, who cannot rely on its support for richer and perennial crops.

5. The kharif crops consisted of two acres of water-melons in the tank bed which were watered by lift, and the rabi crops consisted of:—

125 acres	...	...	...	...	Wheat
4 "	...	...	...	...	Gram.
9 "	...	...	...	...	Cotton.
and 2 "	...	...	...	...	Sundries.

such as small plots of guavas, onions, chillies, and brinjals. The cotton irrigation was unusual, and was necessitated by late sowing. The outturn of the irrigated cotton was not satisfactory. The estimated value of these crops as ascertained from the Revenue Department is Rs. 6,576.

6. The water-rate assessment of the crops detailed above amounts to :—

				Rs.	a.	p.
Kharif	...	...	...	...	4	4 0
Rabi	...	...	...	...	297	2 0
Total Rs.				...	301	6 0

and the revenue from other sources amounts to Rs. 726-4-2 as under :—

				Rs.	a.	p.
Unsubmerged portion of tank bed cultivated during the year	...	...	...	...	300	14 2
Protective rate on land irrigable from the tank	...	...	...	...	412	6 0
Sale of trees	...	...	...	...	13	0 0
Total Rs.				...	726	4 2

The gross assessed revenue thus amounts to Rs. 1,027.

7. The rate per acre of the year's water-rate assessments is Rs. 2-1-11.

8. The details of miscellaneous revenue given in paragraph 6 above will show that the cultivation of the unsubmerged portion of the tank bed forms a great source of revenue. Ever since the land was taken up for the tank, it has been cultivated in such portions as are out of water, on payment of the original land assessment of the plots before they were taken up for the purposes of the tank. The revenue realised on such land up to 1891-92 has amounted to Rs. 5,760, which gives an average annual revenue of Rs. 238, omitting the year 1883-84 when the tank was full and no cultivation of the tank bed was possible. Up to 1890-91 the tank bed cultivation paid the usual rates. The increased demand for cultivation year by year pointed out however that the land was rich, and that it benefited largely by the proximity of the tank and the occasional silt deposit that was placed over it by tank fillings. The land was found to pay handsome profits on account of these advantages. With these considerations, it was proposed in 1890-91, with the consent of the Collector, to sell the lease of the land for cultivation by public auction annually, the highest bidder being allowed the right to cultivate. An enterprising man came forward to ask for a lease of 100 acres of land for a period of 10 years, offering to pay Rs. 4 per acre on such portion of this area as would remain unsubmerged. He, however, receded from his offer, when a formal stamped agreement was demanded from him. Several offers were subsequently received, but the applicants require that the area to be cultivated be cleared by Government of the rich bábúl plantation growing therein. The numbering and the valuation of the trees have to be made, pending which the question remains unsettled.

9. The revenue realised during the year amounts to :—

				Rs.	a.	p.
Water-rates	...	...	...	...	116	4 0
Miscellaneous	...	...	...	...	721	6 3
Total Rs.				...	837	10 3

10. The outstandings of revenue amount to :—

				Rs.	a.	p.
Water-rates	...	...	...	...	4	4 0
Miscellaneous revenue	...	...	...	...	7	5 11
Total Rs.				...	11	9 11

Out of the sum of Rs. 7-5-11, Rs. 3-12-0 are on account of the protective rate on a field under command of the tank, which has been converted into "Forest", and the protective rate on this field is proposed to be remitted. The attention of the Collector has been drawn to the Government orders prohibiting the conversion of irrigable land into forests, and steps are being taken for the disforestation of all land irrigable from the Hartála Tank, which has been included in "Forests".

11. There have been no remissions during the year.

12. The refund of revenue during the year amounts to Rs. 49-0-8, and is on account of the refund of half the assessment realized in previous years from the irrigable land charged with water-rates, though not actually watered.

13. The working expenses amount to Rs. 700, inclusive of the refund of revenue above referred to, and of Rs. 41 for collection of revenue in the Civil Department. Deducting the working expenses from the total assessments of the year, *vide* paragraph 6 above, the clear gain on the year's working is Rs. 327.

14. No separate establishment was employed for measurement of crops irrigated from the tank. The work was done by the usual canal establishment. The rate per acre measured has been calculated on the time of the measurer spent in actual measurement, and it comes to annas 2 per acre, in the rabi season the total cost being Rs. 5-8-0. Out of an area of 140 acres irrigated, only 45 acres had to be measured, the remainder being either whole survey numbers or *pot* numbers.

15. The following table contrasts the area for which water was asked, and the area actually assessed during the year :—

Seasons.					Area applied for.	Area assessed.	Difference.
Kharif	...	...	...	...	2	2	.....
Rabi	...	...	...	...	139	140	1
Total					141	142	1

The difference is slight, and due to under-estimate in applications.

16. The scale of water-rates was the same as in the previous year.

17. There have been no special observations for duty of water. In the kharif season there was no discharge from the tank, the irrigation being by lift in tank bed. In the rabi season an average discharge of 0.49 cubic feet per second gauged at the outlet was let out from the tank, which gives a duty of 285.71 acres per cubic foot.

18. The calculated loss by evaporation and absorption is given below :—

Kharif Season, April to June	...	...	...	Tank dry.
July to September	...	...	...	Nil.
Rabi Season, October 1891 to January 1892 (99 days)	...	...	...	1.62 feet.
Hot Season, February to March 1892 (60 days)	...	...	...	2.13 feet.
Total				3.75 feet.
Average daily loss	...	...	...	.0236

(14).—MHASWA TANK.

This tank is now in operation for 15 years.

2. The storage was sufficient in all the seasons of the year, but was not utilized to the full extent for irrigation purposes. The depth of water in the tank at the beginning of the year was 15.85 feet, representing a storage of 68.37 million cubic feet. This depth went down to 12.14 feet by the 23rd of June 1891, when the tank received its first replenishment. It filled to overflowing on the 1st

of August 1891. At the close of the year the depth of water was 16·75 feet, representing a storage of 77·25 million cubic feet.

3. The rainfall of the year amounted to 26·74 inches against 30·38 inches of the previous year, and 29·72 inches, the average of the past 14 years. The kharif fall was 26·07 and rabi 0·67 inches. Although the total fall of the year was less than that of the previous year, the fall in the kharif season was ample. The favourable monsoon rainfall made the dry-crops independent of the tank water. This accounts for less kharif irrigation during the year, but the falling off in the rabi area can only be accounted for by the apathy of the holders of land under command.

4. The area irrigated during the year amounts to 121 acres, or 4·05 per cent. of the area at present irrigable from the tank, *viz.*, 2,983 acres. Seventeen acres out of the 121 acres were watered during the kharif season, and 104 in the rabi season. This irrigation is much below the average of the past 14 years, which is 46 acres for kharif and 211 acres for rabi crops. This diminution in irrigation is to be ascribed to the apathy of the cultivators who have large holdings. When they get good kharif crops such as cotton, bājri and jowāri by seasonable kharif rainfall, they do not care to go to the trouble and expense of irrigating rabi and the richer kharif crops.

5. The year's irrigation consisted of 3 acres fodder, 1 acre guava, and 13 acres chillies in the kharif season, and 3 acres chillies and brinjals, 5 acres plantains and 96 acres wheat, gram and ground-nut in the rabi and hot weather seasons. The valuation of these crops as ascertained from the Revenue Department amounted to Rs. 909, which is much below the average valuation of crops under other works. The cause of this will be ascertained and treated of in the next report.

6. The assessments of water-rates amount to Rs. 325-9-0, out of which Rs. 73-8-0 were on kharif irrigation, and the balance on rabi irrigation. The rate per acre is Rs. 2·69. The revenue assessed from other sources is Rs. 464-1-9. The gross revenue is thus Rs. 789-10-9.

7. There have been no remissions during the year.

8. The revenue realized during the year is Rs. 914-0-9, of which Rs. 449-15-0 were on account of water-rates, and the remainder on account of revenue from other sources.

9. The unrealized revenue at the close of the year was Rs. 2. Adding to this the year's rabi demands sent for realization after the close of the year, the total outstanding is Rs. 254-1-0.

10. The working expenses in the Public Works Department amount to Rs. 1,207, and inclusive of the collection charges in the Revenue Department to Rs. 1,230, against Rs. 1,657 of the previous year. The reduction is in the charges for repairs and establishment.

11. The cost of measurements of crops irrigated was Rs. 7, giving a rate of pies 11 on the whole area irrigated during the year. This small cost and rate are due to the area actually measured being only 72 acres out of the 121, the remainder being whole survey numbers or survey *pot* numbers, which had only to be checked and verified from village and irrigation records.

12. The following table shows the area assessed as compared with the area applied for during the year :—

Areas,		Kharif.	Rabi.	Total.
Applied for	...	31	86	117
Assessed	...	17	104	121
Difference	...	14	18	4

The difference on the whole is very slight, and is due to the actual irrigation being larger than estimated for in the applications. The difference as apparent in the two seasons taken separately are due to some of the kharif crops being assessed in the rabi season, the water applications having been received late for measurements being made during the kharif season.

13. The scale of water-rates according to which assessments were made during the year is as under :—

				Per acre.
				Rs.
1	Perennial	...	...	10
2	Eight months	...	...	4
3	Four months	...	...	2
4	Monsoon dry-crops	...	...	1
5	Hot weather	...	...	4

and the area irrigated during the year may be classified under this scale as shown below :—

Number.	Crops.	Area.	Assessment.	Assessment under old scale of 1889.
		Acres.	, Rs.	Rs.
1	Perennial	6	56	45
2	Eight months	16	65	48
3	Four months	96	190	119
4	Monsoon dry ... ..	.....	.....	.....
5	Hot weather	3	15	15
	Total ...	121	326	227

The assessments according to the present scale and that which prevailed in 1889 are contrasted in the above table, which will show that the gain under the present scale has been Rs. 99.

14. The duty of water let out from the tank for irrigation is as given below :—

Kharif 63 acres per cubic foot per second.
Rabi 84 acres do. do.

No special observations were made for ascertaining duty.

15. The calculated loss by evaporation and absorption was as under :—

	Feet.
Kharif season, April to June 1891, 83 days	... 3.94
July to September 1891, 8 days	35
Rabi season, October 1891 to January 1892, 123 days	... 2.86
Hot season, February and March 1892, 60 days	... 1.93
Total	... 9.08

Average daily loss due to evaporation and absorption during the year was 0.033 feet.

(15).—JÁMDA CANALS.

1. These canals have now been in operation for the past 25 years.

2. The supply of water in the Girna river has been scanty during the year, as was the case in the previous two years. It showed signs of failure at the close of the previous rabi season, thus discouraging cultivation of sugarcane crops and other perennial irrigation. The rabi supply during the year was sufficient to meet the demands of irrigation. The discharge towards the close of the year was, however, low, and no sugar sowings for the next year could be encouraged. As a short supply at the end of the rabi season and failure in

hot weather have been continuous for three years, the people's confidence in the canals is shaken, and this will affect the irrigation in years of good river supply also. A storage tank is, therefore, a great desideratum, and without it irrigation of richer and more paying crops under the canals can never develop. In the beginning of the year the river was practically quite dry, the discharge on the 1st of April being 5 cubic feet per second only. The first flood came down on 23rd June, when the river discharge was 57·30 cubic feet per second. The discharge continued ample during the rains. In the rabi season it was 161 cubic feet per second on 1st November. This dwindled down to 16 cubic feet per second at the end of February, and 8 cubic feet per second at the end of March 1892. The river was thus left practically dry for the next year 1892-93:

3. The rainfall gauged on the canals during the year at the four rain gauge stations is given below, and compared with the falls of the previous year and average fall at each station :—

	1890-91.			1891-92.			AVERAGE.	
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Years.	Rainfall.
Jámda ...	22·52	2·26	24·78	21·48	0·87	22·35	21	24·84
Kolgaon ...	26·76	2·61	29·37	22·15	1·12	23·27	11	27·25
Bhadgaon Farm ...	27·56	1·90	29·46	25·94	1·62	27·56	21	28·89
Do. Kacheri...	26·51	1·70	28·21	27·75	1·43	29·18	18	30·56

The monsoon fall during the kharif season was copious at all stations, and made the monsoon dry-crops independent of the canal water.

4. The area irrigated during the year amounted to—

	Acres.				
Kharif ...	...	...	...	...	99
Rabi ...	...	...	...	...	774
Total ...					873

As compared with the previous year, there is a loss of 242 acres of kharif and 228 acres of rabi. The falling off seems to be due mainly to the apathy of the irrigators, who have large holdings and do not care to go to the trouble and expense of irrigation, unless they are compelled to do so by a very scanty and unseasonable rainfall during both kharif and rabi seasons. If they get good kharif crops, they seem to be satisfied and do not care to go in for irrigation in the rabi season, except in rare cases. The sugar cultivation which had once risen to 240 acres in 1884, has gone down to 18 acres only in this year. This is the consequence of three bad river supply years that have followed each other in succession. As said above, the state of things on these canals as regards perennial irrigation will not improve until the construction of a storage reservoir for ensuring the water-supply.

5. The assessments of the year were as follows :—

	Rs. a. p.		
Water-rates ...	...	...	2,332 0 0
Other sources ...	...	...	961 12 10
Total ...	3,293 12 10		

6. The remissions amounted to Rs 20-6-0, and had to be granted on account of failure of water-supply in the irrigation of some sugarcane and custard apple plots in the 19th mile of the Left Bank Canal.

7. The amount realizable during the year was :—

			Rs.
Outstandings of former demands...	...	...	238
Rabi demands, 1890-91	...	...	2,080
Kharif, 1891-92, exclusive of the remission granted after submission of the demand statement	...	...	693
Other sources	...	...	961
Total			3,972

of which Rs. 3,686 were realized, leaving an outstanding of Rs. 286. Add to this the rabi demands of 1891-92 sent for realization after the close of the year, and the revenue remaining to be realized amounts to Rs. 1,905.

8. The water-rate assessment of the year amounted to Rs. 2-10-4 per acre, against Rs. 2-5-9 in the previous year. The increase in the rate is due to some of the crops having been watered beyond the season and thus charged with two seasons' rates.

9. The capital outlay on these canals during the year amounted to—

				Rs.
Works	...	...	...	5,353
Establishment	...	...	...	2,335
Tools and Plant	...	...	...	...
Total				8,688

and was incurred in completing the superpassage on the Right Bank Canal, fixing the boundary stones, and on plantation operations.

10. Every effort was made to secure an offer for the babul trees in the 5th mile of the Left Bank Canal, but no advantageous offer could be obtained.

11. The working expenses during the year amount to Rs. 16,483 against Rs. 8,318 in the previous year. The increase is due to the expenditure on repairs being Rs. 9,428, or more than double that of the previous year, as several aqueducts, bridges and buildings needed heavy repairs. A considerable amount was also spent on clearance of silt, which comes in large quantities in the canals on account of insufficient and defective cross drainage works.

12. The cost of measurement amounts to Rs. 7-9-0 and Rs. 13-0-8, or Re. 0-5-1 and Re. 0-0-9 per acre in the kharif and rabi seasons respectively. Out of the kharif area of 99 acres, 75 acres were simply to be inspected and checked with the registers of sub-division of land for irrigation purposes, and 24 acres had to be actually measured. In the rabi season out of the area of 774 acres, 279 acres had to be measured, and the rest simply to be checked with the register of sub-divisions and village records. The rates are calculated upon the actual time of the measurer spent on measurements. The sub-division of land into small irrigation plots facilitates the assessment work, and is beneficial to the irrigators, but until the responsibility of preserving the sub-division marks is accepted by the land-holders, their preservation throws additional work on the canal establishment, and this increases the cost of working the canals to a small extent.

13. The following is a comparison of the area for which water was asked and the area actually assessed :—

		Kharif.	Rabi.
Applied for	...	98	738
Assessed	...	99	774
Difference	...	1	36

The difference is due to the areas in applications being wrongly estimated. There has been no irrigation without permission.

14. The following table shows the areas irrigated and the revenue assessed under the prevailing scale of water-rates, as compared with what it would have been according to the scale that was in force previously (before 1889) :—

Number.	Classification.	Area irrigated.	Assessment, new scale.	Assessment, old scale.
		Acres.	Rs.	Rs.
1	Perennial	37	595	370
2	Eight months	52	184	136
3	Four months and rabi	718	1,436	897
4	Monsoon dry	48	29	82
5	Hot weather	18	88	80
Total ...		873	2,332	1,495

The assessment on area irrigated when verified by the scale of water-rates sanctioned differs, because the fractions of an acre in areas and of a rupee in the assessment are not taken into account, and also because some of the crops have been watered by lift for which half rate is charged, and others have been watered beyond the season, for which the next season's rates have been levied. The gain under the new scale is Rs. 837. The falling off in irrigation is not attributable to high rates but to causes already explained.

(16).—PARSUL TANK.

1. This tank has now been in operation for three years.
2. No new distributaries have yet been constructed for the tank. The irrigation practiced at present is by means of the old channels, which were in existence prior to the construction of the tank. The scheme for new distributaries has been sanctioned, and it is expected that the works will be ready before the rains of 1893.
3. The storage in the tank was sufficient to meet the demands upon it throughout the year. At the beginning of the year it amounted to 61·90 millions cubic feet. This, after supplying the needs of hot weather irrigation, was reduced to 17·95 millions cubic feet on 22nd June 1891. On the following day the tank had its first replenishment, and it filled to overflowing on 1st August 1891.
4. The rainfall of the year amounted to 13·58 inches, against 16·22 inches of the previous year, and 21·13 inches, the average of the past 9 years. The monsoon rainfall from June to September 1891 was 12·67 inches during the year against 12·75 inches in 1890-91 and 8·56 inches in 1889-90. The rabi rainfall was 0·91 inches, against 3·47 inches in 1890-91 and 4·43 inches in 1889-90.
5. The area irrigated during the year is given below in comparison with the areas of previous years :—

					1889.	1890.	1891.
					Rs.	Rs.	Rs.
Kharif ..	...	...	...	..	190	179	115
Rabi ...	...	...	...	..	124	226	296
Total ...					314	405	411

The monsoon rainfall of the year was sufficient to meet the wants of ordinary monsoon dry-crops. The falling off in kharif areas is more than compensated for by the increase in the rabi season. The total irrigation during the year shows a slight increase over the previous year. The people of the villages under command show great eagerness for the cultivation of perennial crops, which is however not permitted at present. There seems to be no objection to give the tank water for irrigation of perennial crops, charging season rates, on the distinct understanding that the cultivators take the risk of failure of the tank, and are prepared in that case to supplement the water-supply by means of wells.

This concession will have to be given at least in the case of Saundana "thal" or "Kayam Bāgāyat." The subject will be further considered and reported upon.

6. The following table shows the distribution of the areas irrigated by crops and by seasons, in the two villages which utilize the Parsul Tank water :—

Crops.	UMRANA.		SAUNDANA.		Total.
	Kharif.	Rabi.	Kharif.	Rabi.	
	Acres.	Acres.	Acres.	Acres.	
Sugarcane ...	...	...	8	2	10
Guava... ..	...	...	...	1	1
Fodder	57	3	27	...	87
Chillies	1	1	...	...	2
Onions	...	...	...	2	2
Methi... ..	...	8	...	78	86
Wheat	...	96	...	40	136
Gram	...	15	...	49	64
Peas	...	...	...	1	1
Bājri	14	...	...	...	14
Sessame	8	...	...	...	8
Total	80	123	35	173	411

There were 10½ acres of perennial crops irrigated during the year. This is contrary to orders, but could not be prevented as the irrigation was in the "Kayam Bāgāyat" of Saundana, which is entitled according to settlement to grow *all* crops without any restriction. The irrigation was assessed at season's rates.

7. The water-rate assessments of the year amounted to Rs. 1,825-7-0, of which Rs. 630-9-0 were on account of kharif, and Rs. 1,194-14-0 on account of rabi, irrigation, giving an average rate of Rs. 4'44 per acre irrigated. There has been no revenue from other sources.

8. The realizations during the year amount to Rs. 1,043-10-0, leaving an unrealized balance of Rs. 1,446-6-0 of former demands, which sum is stated to have been recovered after the close of the year.

9. The outstanding of the year's revenue is Rs. 1,194-14-0, and this is on account of the rabi demands sent for realization after the close of the year.

10. The working expenses of the year amount to Rs. 799 in the Public Works Department, and to Rs. 52 in the Civil Department, or a total of Rs. 851.

11. The tank has earned Rs. 2,697 during the three years that it has been in operation, the assessments to end of the third year (1891-92) being Rs. 3,708, and the working expenses Rs. 1,011.

12. There has been no separate expenditure on measurements of crops during the year, the work being done by the usual canal establishment.

13. The areas for which water was asked compare as follows with the areas actually assessed :—

		Kharif.	Rabi.
		Acres.	Acres.
Area applied for	...	112	306
Actually assessed	...	115	296
Difference	...	3	10

The net difference is 7 acres, which is due to over-estimates of areas in water applications.

14. The areas irrigated may be classified as under according to the season's rates levied on them:—

				Acres.	Assessment.
					Rs.
I.—Kharif	...	...	23	23	23
II.—Rabi...	...	...	291	1,162	1,162
III.—Hot weather	...	...	97	640	640
Total				411	1,825

Under I are included monsoon dry-crops alone, under II ordinary rabi crops, and under III fodder and perennial crops watered in the hot weather and monsoon months, and on which both the seasons' rates have been levied.

15. The calculated loss by evaporation and absorption is as under :—

				Feet.
Kharif season, April, May and June, 83 days	...	...	...	7.42
Do. July to September, 7 days	...	...	...	0.084
Rabi season, October to January, 123 days	...	...	...	4.920
Hot season, February and March, 60 days	...	...	...	3.620
Total				16.04
Average daily loss	...	...	...	.051

(17).—PRAVARA RIVER WORKS—OJHAR CANAL.

1. The area irrigated during the year was 2,621 acres, of which 693 were kharif and 1,928 rabi crops. The total shows a decrease of 542 acres as compared with the area irrigated in the previous year.

Cause of decrease.

2. The decrease is due to timely and favourable rainfall in kharif season and short supply of water in the hot weather.

Comparison of area applied for and irrigated.

3. The following statement compares the area applied for and irrigated during the year :—

Years.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1891-92..	882	693	2,280	1,928	3,162	2,621	189	352	541

The difference in kharif season is due to timely rainfall and that in rabi season is due to the short supply of water, which was not sufficient to irrigate the area applied for.

The area applied for but not irrigated is 21 per cent. of the area irrigated.

Water-rate assessments.

4. During the year the water-rate assessments, excluding remissions, amounted to Rs. 6,490 detailed as below :—

				Rs.
Kharif	...	...	...	2,348
Rabi	...	...	...	4,142

There is, therefore, an increase of Rs. 376 or 6 per cent. over last year's assessment of Rs. 6,114.

5. Remissions amounting to Rs. 201 have been granted during the year, as the crops suffered owing to short supply of water in the hot weather.

6. The average incidence of water-rate per acre was Rs. 2'48 as compared with Rs. 1'93 in the previous year, which is due to the increase in high rated crops.

7. The capital expenditure during the year amounted to Rs. 447 in completing an overbridge for Loni—Satral road and two self-acting sluice gates as an experiment, and in constructing a skew slab drain across the Loni—Hanmantgaon distributary, and in re-measuring land taken up for the canal. The slab drain and the re-measuring land were not completed.

8. The working expenses of the year amounted to Rs. 4,963 as follows:—

			Rs.
Maintenance and repairs ...	...	...	2,400
Share of Establishment ...	...	...	1,942
Tools and Plant ...	...	...	77
Share of collection charges ...	...	...	272
Indirect charges ...	...	...	272
Total ...			4,963

Those of the last year amounted to Rs. 5,803. The rate of working expenses this year per mile of main canal open is Rs. 261 and per acre irrigated is Rs. 1'89.

9. The old water-rates were brought into force in 1889-90.

10. The cost of measuring 2,148 acres during the year (excluding 473 acres sub-divided) was Rs. 276 or two annas and one pie per acre against Rs. 437 or two annas and three pies per acre last year.

11. The duty of water per cubic foot per second varied on the average from 11 to 26 acres in the hot weather, from 8 to 18 acres in the monsoon and from 29 to 136 acres in the rabi season. The cause of poor duty of water in the hot weather and monsoon is because there was small area under irrigation.

12. The river supply was abundant during the monsoon and cold weather. It began to fail about the middle of November when an earthen dam, 2 feet high, was put on top of the weir to increase the storage of water for the hot weather. The discharge of river above weir was 4.99 cubic feet per second on 11th June, and canal water was not flowing below mile 10. Wará system was introduced for distribution of water. The river supply showed signs of failure but on 20th June the river came down in flood.

13. The rainfall during the year as gauged at Ashvi was kharif 12.39, rabi 3.03, total 15.42 inches, or 7.64 inches less than the average during the last five years.

14. At the end of the year, the number of trees on this canal was 12,600. The number of principal kinds were:—

Babhlul ...	...	9,409	Nimbara ...	...	6
Mango ...	...	877	Nimb ...	...	1,608
Mango grafts ...	...	55	Bore ...	...	88
Jambhul ...	...	234	Bamboo ...	...	158
Bakan ...	...	30	Moho ...	...	7
Sandal ...	...	61	Kyene ...	...	8
Orange ...	...	35	Siris ...	...	16
			Miscellaneous ...	...	68

The total number last year was 12,728. The decrease is due to the attack of white ants and to strong wind, which blew down many trees.

15. The new self-acting sluice gates were found to be useless. If distributing outlets could be provided, it is anticipated that much benefit would accrue to irrigation on this canal.

General remarks.

(18).—BHATODI TANK.

1. The area irrigated during the year was 1,576 acres, of which 607 were kharif and 969 rabi crops. The total shows an increase of 325 acres on the area of the last year. The increase was due to scarcity of rainfall.
- Comparison of area applied for and irrigated.
2. The following statement compares the area applied for and irrigated during the year:—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1891-92.	606	607	812	969	1,418	1,576	1	157	158

The excess of area irrigated over that applied for is 10 per cent. and is due to the area entered in water applications being approximate only.

3. During the year the water-rate assessments, excluding remissions, amounted to Rs. 4,818 detailed as below:—

	Rs.
Kharif	2,794
Rabi	2,024

The total amount of the assessment in the last year was Rs. 4,143; there is, therefore, an increase of Rs. 675 or 16 per cent.

4. Remissions amounting to Rs. 11 have been granted during the kharif season, as the crop suffered owing to short supply of water in the tank during the hot weather.
5. A credit of Rs. 8,433 on account of assessment of lands irrigated by percolation from the tank at the rate of 50 per cent. of the receipts is to be given to the revenue account of the tank from the introduction of the revised settlement as per Government Resolution No. A. I.—1757, dated 16th October 1891. The amount yearly to be credited is Rs. 1,205. The question about the village of Takli is under reference.

6. The incidence of water-rate per acre was Rs. 3.06 against Rs. 3.31 in the previous year, which is due to the decrease in area of monsoon and hot weather crops.

7. The capital account of this work is closed but an expenditure of Rs. 178 has been incurred in completing certain additions to the Inspection Bungalow at Bhatodi.

8. The working expenses of the year amounted to Rs. 3,447 detailed as below:—

	Rs.
Maintenance and repairs	1,814
Share of establishment	1,112
Tools and Plant	39
Share of collection charges	326
Indirect charges	156
Total	3,447

Those of the last year amounted to Rs. 4,008. The rate of working expenses this year per mile of main canal open is Rs. 766 and per acre irrigated is Rs. 2.19.

Water rates.

9. The old water-rates were brought into force in 1889-90.

10. The duty of water per cubic foot per second varied on the average from 2 acres to 21 acres in the hot weather, from 10 acres to 100 acres in the monsoon and from 122 acres to 335 acres in the rabi season.

11. The cost of measurement of 232 acres (excluding 1,344 acres which are sub-divided) was Rs. 36, or 2 annas and 6 pies per acre against Rs. 101 or 1 anna and 3 pies per acre irrigated last year. The excess rate is due to the fields being at a distance from each other.

12. The rainfall during the year as gauged at Bhatodi was kharif 17·16, rabi 3·14: total 20·30 inches, or 7·79 inches less than the average during the last five years.

13. The water-supply of the tank fell short in the hot weather; it was ample in the monsoon and early part of rabi season. On 1st April 1891 the water stood at 12·44 feet above sill of outlet sluice, *i. e.* at R. L. 82·44 against R. L. 84·96 on 1st April 1890. On 23rd June it had fallen to R. L. 70·00. The canal was dry for 19 days. The first replenishment took place on 24th June and the tank gradually began to fill. The highest level of water in the tank was 93·80 on 4th September *i. e.* 1·30 feet above crest of waste weir. The waste weir was flowing for 16 days during the year. The R. L. of surface of water on 31st March was 75·70.

14. At the end of the year, the number of trees on the canal was 6,499. The number of principal kinds were:—

Mango ...	1,323	Orange ...	19
Do. grafts ...	17	Jambul ...	85
Tamarind ...	44	Nimb ...	437
Bore ...	65	Sandal ...	87
Khirmi ...	4	Siris ...	84
Rithe ...	1	Babbul ...	4,111
Sindi ...	2	Miscellaneous trees ...	220

The total number last year was 6,614. The decrease is due to the attack of white ants. Forty babbul trees were washed away by flood.

(19).—MÁTOBA TANK.

1. The water in the tank, which is filled by the surplus water from the Mutha Canals, stood at the opening of the year, 1st April 1891, at 23·42 feet above the sill of the outlet. The water level then fell continuously until 20th June and then partially filled and again reached the level of the sill on 31st July. In July the sluice of this tank was removed for repairs and consequently the supply in the tank was lost. On 3rd August 1891 it commenced to be replenished and the tank filled to a height of 25·15 feet above the sill on the 3rd November and then gradually fell and reached the level of 12·52 on 31st March 1892, or 10·98 lower than the level of the previous year.

2. The area irrigated from this tank during the year was 2,000 acres, of which 1,142 were kharif and 858 rabi. The total shows an increase of 121 acres as compared with the previous year, or 6 per cent, which is due to unfavourable rainfall during the rabi season.

The assessment of water-rates amounted to Rs. 13,080 and the miscellaneous revenue to Rs. 193, making a total of Rs. 13,273 against Rs. 8,014 in the previous year, or increase of nearly 66 per cent. The incidence of water-rates was Rs. 6·54 per acre irrigated against Rs. 4·21 in the previous year, due to the much larger area of sugarcane grown.

3. The areas irrigated were ascertained by actual measurement, most of which were taken by measurers specially entertained for the purpose, and the remainder by an inspector in the intervals of his regular work. The total cost of measurements was Rs. 92, or 9 pies per acre, as compared with 8 pies in the previous year.

4. The working expenses amounted to Rs. 2,889 which represents a rate per mile of canal in operation of Rs. 169·94 or 1·44 per acre irrigated.
- Working expenses.
5. The highest duty of water during the month in which no rain fell was obtained in the 2nd fortnight of January when the area irrigated was 1,909 acres and the average discharge 5·53 cubic feet per second, giving a duty of 345·21 acres per cubic foot per second. The lowest duty in the dry season was in May when the area irrigated was 701 acres and the average discharge 10·98 cubic feet per second, giving a duty of 63·84 cubic feet per second.
- Duty of water.
6. The following is the comparison of areas irrigated and applied for :—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
1,151	1,622	2,773	1,142	858	2,000	...	...	9	764

The falling off in the irrigated area as compared with the applications was due to applications having been sent in late in large numbers, and before water could be given to all, the crops failed.

7. The number of trees on this tank was 16,738, the principal trees being bābul 16,423 in number.

8. The loss by evaporation and leakage cannot be accurately determined owing to small quantity of water continually entering the tank from the Mutha Right Bank Canal.

(20).—KA'SURDI TANK.

1. This tank was empty on 1st April and remained so till 20th June, when it was replenished; after which it again gradually fell 5 feet to the level of the sill on 3rd October, and replenished again rapidly on 11th October, when the level was 222·90 or 15·40 above the sill of outlet. The storage was drawn upon from the 12th October and the water level fell to R. L. 212·90 on 23rd December 1891.

2. The area irrigated was 52 acres of kharif and 88 of rabi crops; the total shows a decrease of 3 acres as compared with the previous year. During the hot season, when there was no water in the tank, the bed of the tank was utilised for the cultivation of melons, and Rs. 163 were obtained as rent.

3. The assessment amounted to Rs. 480, of which Rs. 296 were on account of water-rates and Rs. 184 for miscellaneous revenue.

4. The areas irrigated were ascertained by actual measurements by measurers specially entertained for the purpose and from 9 to 12 per cent. were checked by the subordinate in charge.

The cost of measurement amounted to Rs. 7 or at the rate of 10 pies per acre.

5. The following is the comparison of areas irrigated and applied for :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
44	94	138	52	88	140	8	...	...	6

6. There were 1,244 trees on this tank, of which 1,234 were bābul.

(21).—SHIRSUPHAL TANK.

1. At the commencement of the year the water in this tank stood at 26·90 feet above the sill of the outlet sluice, that is 1·67 feet higher than at the corresponding period of the previous year. The tank received its first replenishment on 3rd October and then gradually filled to the maximum level of the year, i.e., 85·30 or 25·30 above the sill of outlet on 9th October 1891.

At the close of the year the water level was 14·73 above outlet sill, or 12·17 feet lower than on the corresponding date of the previous year.

2. The areas irrigated were 399 acres of kharif and 564 acres of rabi crops, or a total of 963 against 1,005 acres in the previous year.

3. The assessment amounted to Rs. 3,591 of which Rs. 3,445 were on account of water-rates and Rs. 146 for miscellaneous revenue.

4. The areas irrigated were measured by measurers specially entertained for the purpose and partly by an inspector when time could be spared from his ordinary work, and the measurements were checked as usual by the subordinate in charge. The cost was Rs. 35 or 7 pies per acre against 11 pies in the previous year.

5. The working expenses amounted to Rs. 3,958, which represents a rate for maintenance per mile of canal in operation of Rs. 316·64 and Rs. 4·11 per acre irrigated.

The executive charges this year are very heavy, being Rs. 1,709 against Rs. 537 in the previous year.

6. The highest duty of water in the month during which no rain fell was obtained in the second fortnight of January, when the area irrigated was 718 acres and the average discharge 2·71 cubic feet per second, giving a duty of 264·94 acres per cubic foot per second. The lowest duty in the dry season was in April, when the area irrigated was 385 acres and the average discharge 5·28 cubic feet per second, giving a duty of 72·92 acres per cubic foot per second.

The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality. No useful information of the kind can be obtained for the rainy season, the canals being single banked.

7. The following is the comparison of areas irrigated and applied for :—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
637	409	1,046	399	564	963	...	155	238	...

The larger area in rabi is due to want of rain from September to December and the smaller quantity in kharif due to rain in July.

8. The number of trees on this tank was 10,031 of which 8,623 were babul and the rest miscellaneous trees.

9. To ascertain the loss by evaporation and leakage during the year, gaugings were taken during the months of April, May, June, July, August, October, November and December 1891 and January, February and March 1892, or a total number of days 316; during this period the loss amounted to 132,986,757 cubic feet, or rather more than $\frac{1}{3}$ rd of the total capacity of the tank above outlet level.

(22).—BHA'DALVA'DI TANK.

1. At the commencement of the year the water in the tank stood at 25·20 above the outlet sluice, that is 1·54 feet lower than at the corresponding period of the previous year. There were good replenishments in the latter end of

June, first week in September and again on the 28th September. On the latter date the water level was 11.10 feet above the outlet sluice, and it continued to rise until it reached its maximum 31.50 for the year on the 8th October 1891; it then gradually fell and at the close of the year was 18.30 feet, or 6.95 lower than on the corresponding date of the previous year.

2. The areas irrigated were 408 acres of kharif and 440 acres of rabi, making a total of 848 acres against 643 acres in the previous year.

The assessments of water-rates amounted to Rs. 3,967 and the miscellaneous revenue to Rs. 213, making a total of Rs. 4,180 against Rs. 3,115 in the previous year.

3. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an inspector when time could be spared from his ordinary work. The total cost of measurements was Rs. 51 or pies 11 per acre.

4. The working expenses amounted to Rs. 3,352 which represents a rate per acre irrigated of Rs. 3.95.

The executive charges this year are very heavy, being Rs. 1,489 against Rs. 512 in the previous year.

5. The highest duty of water obtained during the year was in the first fortnight of January when the area irrigated was 688 acres and the average discharge was 3.92 cubic feet per second, giving a duty of 175.51 acres per cubic foot per second. The lowest duty in the year was in May when the area was 404 acres, and the average discharge 5.36 cubic feet per second, giving a duty of 75.37 acres per cubic foot per second.

The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

6. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
381	337	718	408	440	848	27	103	...	...

The larger quantity in rabi is due to no rain during the rabi season.

7. The number of trees on this tank was 7,736, of which 6,811 were bābul and 768 bāmbu.

8. To ascertain the loss by evaporation and leakage during the year, gaugings were taken during all the months from April 1891 to March 1892, or a total number of days 323: during this period the loss amounted to 77,313,406 cubic feet, or rather more than $\frac{1}{3}$ rd of the total capacity of the tank above outlet level.

(23).—KOREGAON TANK.

The rainfall gauged during the year was 22.93 kharif, 0.69 rabi: total 23.62 inches, against 29.83 of the last year.

2. The tank did not fill this year. The water in the tank rose to its highest on the 6th September 1891 to R. L. 94.50 against 91.75 of the last year on the 11th December 1890.

3. The total area irrigated during the year was 429 acres against 220 of the previous year; of this 66 acres was kharif and 363 acres rabi. The decrease of 55 acres in kharif was owing to insufficient water in the tank at the commence-

ment of the season, and the increase of 264 acres in rabi was due to there being no sufficient rain for the rabi crops. The areas for which water applications were received are as follows :—

	Kharif. Rabi. Total.	
Applications	66	315 381

The difference between the water applications and actually irrigated is due to the inability of the cultivators of making even a rough guess.

4. The water-rates for the year amounted to Rs. 1,061 against Rs. 590 for the last year owing to increased acreage for rabi. The gross assessment from all sources was Rs. 1,073 against Rs. 599 for the last year.

5. The number of large trees of all kinds is 1,664 and that of those below 5 feet is 1,633.

6. The working expenses of the year, including all direct and indirect charges, were Rs. 886 and the collection charges Rs. 26. The maintenance charges amounted to Rs. 362. This amount is necessary for keeping the canal in an efficient state by removing the silt that accumulates every year during the monsoon and otherwise repairing it. The area irrigated was measured by the Canal Kárkún and one khalási under him. The measurements were checked by the subordinate in charge. The cost on this account is Rs. 120, giving Re. 0-4-6 per acre of irrigated area.

7. The gauge observation made during the year for determining the duty of a cubic foot (per second) of water gives the following result :—

Eight months' crop—	Four months' crop—
Ground-nut 130 acres.	Inferior rice 115 acres.

The duty for perennial crop has not been given, as some waterings for the growth of the crop were not given owing to want of water in the tank.

8. One rain gauge is maintained on the catchment area which is 4.40 square miles. The total rainfall gauged is 23.62 against 21.30 of the last year. This rainfall gives 241.4 millions of cubic feet of water on the catchment area. The run-off has been calculated to be .344 of the total average rainfall.

9. The following figures give the storage; evaporation and absorption during the year :—

Total quantity of water in tank	...	127,328,348
Quantity of water discharged through the canal... 38,673,504		
Actual quantity of water in the tank on 31st March 1892	17,166,600	
	Total	55,840,104
Quantity lost by evaporation and absorption during the year	...	71,488,244

(24).—ASHTI TANK.

1. The rainfall gauged during the year was kharif 14.15, rabi 4.05 = 18.20, against 25.86 of the last year.

2. The water in the tank rose to full supply level (228.60) on the 9th October 1891, and kept flowing through the waste weir cut up to the 11th October 1891. On this date the cut was closed by a temporary earthen dam to the height of R. L. 231. The tank water attained its maximum height 229.80 on the 16th October 1891.

3. The area irrigated during the year was 1,702 acres against 1,124 of the last year; of this 559 acres was kharif and 1,143 acres rabi. Compared with the figures of the last year there was a decrease of 17 acres in kharif and an increase of 595 acres in rabi. The decrease is practically nothing; the increase in rabi was owing to the insufficient rains for that crop.

4. The area applied for as per statement of irrigation operation was as under :—

				Kharif.	Rabi.	Total.
Applications	...	...	...	565	1,139	1,704
Actual	...	...	...	559	1,143	1,702

This will show that there was no practical increase or decrease in irrigation over water applications (the area irrigated being 1,702 acres) as the land under command of this tank is sub-divided into small irrigation numbers.

5. The water-rate for the year amounted to Rs. 4,610, against Rs. 3,234 for the last year, owing to the increased acreage of rabi. The gross assessment from all sources for the year amounted to Rs. 6,200 against Rs. 4,294 for the last year. The increase of Rs. 1,906 was made up from the amounts recovered for the sale of bábúl trees behind the dam and of aloe leaves, &c., and for lands let out for cultivation and grazing.

6. The trees along the canals and tank contour are in a promising state. Some bábúl trees were offered for sale, but fair prices not being offered, the sale was not effected. The bábúls along the canals were trimmed by canal establishment and the loppings sold to cultivators for fencing purposes. The expenditure on plantation amounted to Rs. 263. The number of large trees of all kinds is 33,668 and of those below 5 feet is 13,881. There are also a number of smaller trees not included in the above figures.

7. The working expenses of the year including all direct and indirect charges were Rs. 5,333 and the collection charges Rs. 146. The maintenance charges amounted to Rs. 2,700, representing Rs. 91 per mile of canal. This was found necessary for keeping the canals in efficient order. The velocity of the currents in the canals being small, there is a constant growth of weeds requiring frequent removal. The land under command of this tank being sub-divided into small and suitable irrigation numbers, no annual charges are incurred for measuring crops.

8. The gauge observations made during the year for determining the duty of a cubic foot of water per second gives the following results :—

Perennial Crops.

Sugarcane.	Plantain.	Average.
Acre.	Acre.	Acre.
101	77	89

Eight months' Crops.

Ground-nut.	Chilly.	Average.
Acre.	Acre.	Acre.
175	204	189.50

Four months' Crops.

Inferior Rice.	Jod Wheat.	Average.
Acre.	Acre.	Acre.
147	127	137

9. Two rain-gauges are maintained on the catchment area of this tank, which is 92 square miles. The average rainfall as gauged by the two gauges is 17.35 against 16.44 of the last year. The rainfall gives 3,708 millions of cubic feet of water on the catchment area. The run-off has been calculated to be 210 (203 when the rainfall from June to October 1891 is taken) of the total average rainfall.

10. The following figures show the storage, evaporation and absorption during the year :—

The total quantity of water in the tank	...	...	1,472,995,473
Quantity of water discharged through the canals and waste weir	...	...	257,932,512
Actual quantity in the tank on the 31st March 1892	...	...	685,071,372

Total ... 943,003,884

Quantity lost by evaporation and absorption during the year ... 529,991,589

(25).—REWARI CANAL.

Iron work to the value of Rs. 142 for additions and alterations to the head sluice of the canal was purchased.

2. The rainfall during the year was 22·42 inches (kharif 16·72 and rabi 5·70) against 26·54 inches in the previous year. The average for the previous 10 years was 31·15 inches for the two seasons.

3. The area irrigated compared with the previous four years was :—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1887-88	...	...	207	547	754
1888-89	...	...	225	775	1,000
1889-90	...	...	192	1,033	1,225
1890-91	...	...	205	822	1,027
1891-92	...	...	229	608	837

There is an increase of 24 acres in kharif and a decrease of 214 acres in rabi on the areas of last year. The decrease in rabi was owing to short supply of water in the river due to the deficient rainfall of the year.

4. The area irrigated was 23 per cent. of that under command of the canal and 11 per cent. in excess of that applied for.

5. The assessments excluding remissions were as follows :—

			Kharif.	Rabi.	Total.
			Rs.	Rs.	Rs.
1887-88	...	...	1,747	1,165	2,912
1888-89	...	...	2,143	1,743	3,886
1889-90	...	...	1,391	3,266	4,657
1890-91	...	...	2,172	2,826	4,998
1891-92	...	...	2,591	2,228	4,819

Remissions had to be granted to the extent of Rs. 15 in the kharif season and Rs. 25 in the rabi season ; this latter remission is of a permanent nature, *vide* Government Resolution No. 3610, dated 23rd August 1865, in the Revenue Department. The increase in the kharif assessment was chiefly due to the increased area of the perennial crops, and although there was a decrease of Rs. 598 in rabi, on the total assessment there was a decrease of only Rs. 179. Revenue from other sources was Rs. 65, bringing the total gross revenue to Rs. 4,884.

6. The average water-rate was Rs. 5·76 per acre against 4·8 of the previous year.

7. The cost of measurements was Rs. 160, equal to Re. 0·3·0 per acre, or nearly the same as that of the previous year.

8. The working expenses including direct and indirect charges amounted to Rs. 1,939 or the same as last year, and are 40 per cent. on the gross revenue, against 38 per cent. of the year before. The rate per mile of canal was 388, which is the same as that of the previous year. The rate per acre irrigated was Rs. 2·32 against Rs. 1·89 in the previous year.

9. The maximum duty of water obtained on this canal was 200 acres per cubic foot per second in January 1892 and the minimum 41 acres in April 1891.

10. The operations of the year shew a net profit of Rs. 2,945 or 5·27 per cent. on the direct capital outlay of Rs. 56,045.

(26).—UPPER MA'N RIVER WORKS.

1. An escape on the Dahivadi channel and a bridge on the Karanj nála were constructed during the year at a cost of Rs. 830.

2. The rainfall of the year as gauged at Gondowli was (kharif 7·34 and rabi 4·15) 11·49 inches against 17·88 in the year 1890-91, the average of the previous ten years being 19·04 inches for these two seasons.

3. The area irrigated compared with the last four years was:—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1887-88	...	...	558	486	1,044
1888-89	...	...	746	634	1,380
1889-90	...	...	743	688	1,431
1890-91	...	...	954	416	1,370
1891-92	...	...	858	533	1,391

There was a decrease of 96 acres of kharif and an increase of 117 acres of rabi on the areas of last year.

4. The area irrigated was 18 per cent. of the area under command and 10 per cent. in excess of that applied for.

5. The water-rate assessment during the year amounted to Rs. 4,302, as under:—

			Kharif.	Rabi.	Total.
			Rs.	Rs.	Rs.
1887-88	...	...	2,291	1,404	3,695
1888-89	...	...	3,124	1,707	4,831
1889-90	...	...	3,945	2,470	6,415
1890-91	...	...	4,609	1,247	5,856
1891-92	...	...	2,640	1,662	4,302

The decrease in the kharif assessment is chiefly due to the falling off in the perennial area owing to the deficient supply of water from the Pingli tank. The revenue from other sources was Rs. 163 and the gross revenue amounted to Rs. 4,465.

6. The incidence of water-rate per acre was 3·09 against 4·27 per acre in the previous year.

7. The cost of measurement was Rs. 109, being at the rate of 1 anna and 3 pies per acre measured.

8. The working expenses including all charges amounted to Rs. 5,342 showing an excess of Rs. 619 over those of the previous year, and equal to a cost of Rs. 222 per mile of canal and 3·84 per acre irrigated. The expenses also amount to 120 per cent. on the gross revenue.

9. The maximum duty per cubic foot per second of discharge was 80 acres in February 1892 and minimum 19 acres in March 1892.

10. On the 1st April there were 5·67 feet of water in the tank, which ran out by 3rd June. On the 19th and 20th the bank rose 20 feet in two days, due to rainfall of 2·35 inches. The tank did not fill during the year the highest level reached (15th October) being 4·60 feet below waste weir or full supply level. The tank was practically empty on the 31st March 1892, the storage being only 1·77 foot on the outlet sill or 2½ millions cubic feet storage.

(27).—YERLA RIVER IRRIGATION WORKS.

A long and deep crack was formed in the Nehr Tank Dam, and to prevent damage a cut 10 feet deep was made through the waste weir and the crack filled in. The expenditure incurred was Rs. 4,000.

2. The rainfall of the year was 19·93 inches (kharif 14·76 and rabi 5·17) against 23·50 in the year before and 29·54 the average of past 10 years for the same two seasons.

3. The area irrigated as compared with the previous four years was:—

		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
1887-88	... ..	587	574	1,161
1888-89	... ..	691	972	1,663
1889-90	... ..	774	1,150	1,924
1890-91	... ..	895	919	1,814
1891-92	... ..	915	1,332	2,247

showing an increase of 20 acres in kharif and 413 acres in rabi on the areas of last year. This increase was due to the deficient and unseasonable rainfall. The area irrigated was 21 per cent. of the area under command, and 28 per cent. in excess of that for which applications were received.

4. The water-rate assessments amounted to Rs. 9,456 excluding remissions, and compare with those of the previous year as follows:—

		Kharif.	Rabi.	Total.
		Rs.	Rs.	Rs.
1887-88	... ..	3,194	1,505	4,699
1888-89	... ..	3,871	2,568	6,439
1889-90	... ..	4,716	3,511	8,227
1890-91	... ..	5,171	3,307	8,478
1891-92	... ..	5,624	3,832	9,456

showing an increase on the total assessment of Rs. 978. Remissions to the extent of Rs. 6 were granted; this item is permanent as sanctioned in Government Resolution No. 107 W.I.—327, dated 22nd August 1877. The revenue from other sources was Rs. 656 and the gross revenue Rs. 10,112.

5. The average water-rate was Rs. 4·21 against 4·67 per acre in the previous year.

6. The cost of measurement was Rs. 303 equal to 2 annas 2 pies per acre measured.

7. The working expenses including direct and indirect charges on this system of canals amounted to Rs. 6,440, which represents a cost of Rs. 201·25 per mile of canal open and Rs. 2·87 per acre irrigated against 3·38 per acre in the year before. The expenses amounted to 64 per cent. on the gross revenue.

8. The total assessed revenue was, as shown, Rs. 10,112, and the total working expenses amounted to Rs. 6,440. The operations of the year therefore showed a *net* profit of Rs. 3,672, or 0·60 per cent. on the direct capital outlay of Rs. 6,14,785.

9. The maximum duty of water performed on these canals was 80 acres per cubic foot per second in April 1891.

10. On the 1st April 1891 there was a depth of 20·13 feet storage in the Nehr Tank, which was more than enough for hot weather requirements. The lowest level reached was on 26th July, 10·11 feet on the outlet sluice or about 70 millions cubic feet storage. The tank did not fill, the highest level being (15th October) rather less than 18 feet depth of storage which did not suffice for the extra demands and the tank was practically dry at the end of March 1892.

(28).—CHIKHLI CANAL.

The capital account of this canal is closed.

2. The rainfall of the year was 16·17 inches (kharif 10·83 and rabi 5·34) against 25·34 inches in the year 1890-91 and 24·65 inches the average of the past 10 years for the same two seasons.

3. The area irrigated during the year as compared with the last four years was :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1887-88	247	60	307
1888-89	231	77	408
1889-90	312	101	413
1890-91	322	85	407
1891-92	375	19	394

The increase in kharif is due to bad rainfall ; the decrease in rabi to short water-supply in the river. The total area shows a decrease of 13 acres only.

The area irrigated was 27 per cent. of the irrigable area under command of the canal and was about equal to that which was applied for.

4. The water-rate assessments have been as under :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1887-88	1,063	167	1,230
1888-89	1,225	201	1,426
1889-90	1,198	334	1,532
1890-91	1,485	359	1,844
1891-92	1,546	71	1,617

There was a decrease of Rs. 227 which was due chiefly to the insufficient supply of water in the river during the rabi season.

5. Revenue from other sources was Rs. 107 and the gross revenue amounted to Rs. 1,724.

6. The working expenses including direct and indirect charges amounted to Rs. 784 against Rs. 782 during the previous year. The expenses amounted to 45 per cent. on the gross revenue and Rs. 120 per mile of canal open and 1·99 per acre irrigated.

7. The incidence of water-rate was Rs. 40·10, against 4·53 of the year before.

8. There were no measurement charges during the year under report, the measurer employed on the Krishna Canal having taken the measurements on the other.

9. The maximum duty of water was 76 acres per cubic foot per second in October 1891 and minimum four acres per cubic foot per second in March 1892.

10. The operations of the year show a net profit of Rs. 940 or 1½ per cent. on the direct capital outlay of Rs. 53,803.

(29).—MAINI TANK CANAL.

The work of flood channel sanctioned at an estimated cost of Rs. 9,816 was completed during the year under report. The front slope of the dam was made 3 to 1 for a length of about 1,100 feet.

2. The rainfall of the year as gauged at Maini was 13·37 inches (kharif 17·71 and rabi 5·66) against 18·68 inches of the year before and 22·33 inches the average of the past ten years for these two seasons.

3. The area irrigated during the year as compared with the last four years was :—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1887-88	...	...	739	337	1,076
1888-89	...	...	1,306	581	1,887
1889-90	...	...	1,326	449	1,775
1890-91	...	..	1,308	418	1,726
1891-92	...	...	1,155	532	1,687

showing a decrease in kharif of 153 acres and an increase in rabi of 114 acres; on the total there was a decrease of only 39 acres on the areas of last year.

The kharif decrease was in dry crops, owing to the fact that although the rainfall was less it was more evenly distributed than in the previous year.

4. The area irrigated was 36 per cent. of the irrigable area under command and four per cent. in excess of that applied for.

5. The amount of water-rate assessment was Rs. 7,989 and in comparison with that of the previous years was as follows :—

				Kharif.	Rabi.	Total.
				Rs.	Rs.	Rs.
1887-88	...	...	...	3,183	918	4,101
1888-89	...	...	...	4,526	1,524	6,050
1889-90	...	...	...	5,904	1,614	7,518
1890-91	...	...	...	6,212	1,623	7,835
1891-92	...	...	...	6,450	1,539	7,989

which shows an increase of Rs. 238 in kharif and a decrease of Rs. 84 in rabi and on the total assessment an increase of Rs. 154.

6. The revenue from other sources was Rs. 153 and gross revenue amounted to Rs. 8,142.

7. The working expenses including direct and indirect charges amounted to Rs. 18,222, which includes the large sum of Rs. 12,279 adjusted against revenue for special repairs on account of damages done by heavy floods of 1889. Excluding this unusual charge, the working expenses amounted to Rs. 5,943, or Rs. 371 per mile of canal open, Rs. 3·52 per acre irrigated and about 73 per cent. on gross revenue.

8. The average water-rate was Rs. 4·74 as compared with 4·50 of the previous year.

9. The cost of measurement was Rs. 237, which represents 2 annas 3 pies per acre irrigated, or nearly equal to that of the year before.

10. The operations of the year show a net profit of Rs. 2,199 or 0·59 per cent. on the direct capital outlay of Rs. 3,67,671.

11. The maximum duty of water was 245 acres per cubic foot per second in October 1891 and minimum 34 acres in March 1892.

12. On the 1st April 1891 there was 23½ feet depth of storage in the tank, which sufficed for requirements until the tank ran dry on 18th September. A week later a replenishment was received and the tank filled to overflowing on the 15th October. At the end of March 1892 there was a depth of 15½ feet of water in the tank.

(30).—MUCHKUNDI TANK.

The year has been a remarkable one in this tank's history in that owing to the failure of the later rain the cultivators awoke for the first time to the value of the storage water.

2. The rainfall of the year compared with that of the previous year was as under :—

				1890-91.	1891-92.
				Inches.	Inches.
Kharif	...	...	...	7-00	9-05
Rabi...	...	...	...	10-31	1-18
Total				17-31	10-70

The average annual rainfall is 21 inches. The tank is in the extreme eastern districts where the later or north-east monsoon is depended upon for cultivation. During the year this later rain practically failed and there was a run on the tank, for the first time in its history, for water to save the crops.

3. Previous to 1890-91 there was no irrigation below the tank, except one small patch of garden varying from 2 to 3 acres. In 1890-91 there was some sign of improvement, but in 1891-92 there was a sudden jump up in area as under :—

				Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.
1890-91	...	...	...	10	1	11
1891-92	...	...	...	6	199	205

4. Up to 1899-90 the assessed crop revenue amounted to about Rs. 20 annually. Subsequently the figures are :—

				Kharif.	Rabi.	Total.
				Rs.	Rs.	Rs.
1890-91	...	...	...	59	5	64
1891-92	...	...	...	51	301	352

5. The revenue from other sources (sales of grass) realized Rs. 188, bringing the gross revenue of the year to Rs. 540.

6. The working expenses of the year amounted to Rs. 495, being at the rate of Rs. 64 per mile of canal and Rs. 2-42 per acre irrigated. The outlay shows an increase of Rs. 152 over the figure of the previous year. This is due to the extra expense incurred in putting the, newly-opened lengths of canal and distributaries into working order, and of course to the largely increased area of irrigation.

7. The tank therefore earned Rs. 45 more than its working expenses. Upwards of 1,000 acres of rabi crops might have been irrigated had the cultivators commenced to take water earlier, but the result so far is encouraging and it is hoped that in future years of scarcity the cultivators will be more prompt in availing themselves of the water for saving and bringing to maturity their ordinary kharif and rabi crops and not confine their applications to garden crops for which the tank is not suited.

8. In another way the prospects of this tank are improving. Owing to the porous nature of the bed of the tank (in the sand stone formation) there has for years been a heavy loss of water in percolation and absorption, but this is now very perceptibly diminishing, and observations show that the tank is retaining more and more water as time passes.

9. During the year under review the tank did not dry until the end of May 1891, or some months later than usual. It remained dry until the end of September, when it was replenished to a depth of nearly 7 feet and the storage was enough to save the rabi crops mentioned above.

(31).—NILGUND TANK.

It is proposed to cut down the waste-weir so as to reduce the tank to its original capacity and to avoid submerging land not yet acquired. When the settlement is again revised in 1906 the waste weir can be made up again at trifling cost, and water-rates assessed on the land which is benefitted. At present all the irrigated land is assessed at dry-crop rates.

(32).—GADIKERI TANK.

The management of the tank is under the control of the Revenue Department.

2. There was no expenditure during the year on the tank.

3. The area irrigated by the tank was 337 acres. The consolidated revenue amounted to Rs. 2,483 of which the irrigation share amounted to Rs. 1,987.

(33).—DÁMBAL TANK.

The rainfall of the year (during the kharif and rabi seasons) amounted to 6.19 as compared with 14.92 inches average of previous 12 years.

The year's rainfall was the worst on record since the total failure of 1876. The Doni gauge 3 miles from Dámbal was discontinued during the year, as the registers of both are practically the same.

2. The tank was dry from 23rd March to 13th May, 24th May to 3rd June and from 11th June to 12th October 1891. On 16th October it reached its highest level 5.25 feet below F. S. L., and there was practically no further replenishment. It was the worst year on record for replenishment, and, owing to the deficiency of rainfall, a good replenishment was more than ever necessary. The catchment, though chiefly hilly, is notorious for its light rainfall and poor run-off.

3. The area irrigated, the assessments, the average water-rate and the working expenses, including all charges of the "new irrigation" of the year compare with those of the previous year and with the averages of five years as under :—

Period.	Kharif.		Rabi.		Total.		Average water-rate.	Working expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1890-91	177	497	36	139	213	636	2.99	717
1891-92	17	17	146	308	163	325	1.99	642
1886-91 average ...	96	441	46	193	142	634	4.46	607

Owing to the failure of the rainfall the kharif area was greatly diminished, but a large area of jowári (110 acres) was cultivated in the rabi season although the tank's replenishment was a small one. To this extent the tank was useful in this season of scarcity, a larger and earlier replenishment would have greatly increased its utility. The average water-rate was less than half the average, and this is due to the poorer quality of crops grown.

4. The average duty of the channels in the kharif and rabi seasons (including the area of the "old irrigation" area 97 acres) was 146 and 86 acres

per cubic foot per second. These high duties are due to the infrequent discharges of the channels, necessitated by the small tank storage.

5. The miscellaneous revenue Rs. 356 included Rs. 250 from the sale of the right of grazing and Rs. 103 from plantations. The babbul plantations round the tank will in time become very valuable.

Endeavours were made to sell trees which should be thinned out, but without much success, as there was no demand for fuel for the cotton presses at Gadag. Next year it is hoped the trees will be sold.

6. The operations of the year show a net profit of Rs. 707, or 1.16 per cent. on the direct capital outlay of Rs. 60,847.

(34).—MEDLERI TANK.

The rainfall of the year (during the kharif and rabi seasons) amounted to 9.63 inches as compared with 17.79 inches average of previous 14 years, and it was the worst on record since 1876-77.

2. The tank received small replenishments in May and June and thereafter none till 3rd October, the depth was only 3.30 feet above sluice level. On 7th November the tank received its final replenishment when its surface reached 5.10 feet below F. S. L. The year was the worst on record for replenishment and in consequence some monsoon applications for water had to be refused. The catchment is a hilly one, giving good run-off, and the tank generally fills annually.

3. The area irrigated, the assessments, excluding remissions, the average water-rate and the working expenses, including all charges of the year, compare with those of previous years as follows:—

Period.	Kharif.		Rabi.		Total.		Average water-rate.	Working expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1890-91	59	262	16	84	75	346	4.6	618
1891-92	50	312	53	178	103	490	4.76	619
1886—91 average	76	386	15	89	91	475	5.22	1,242

The kharif area was rather less owing to diminished water-supply but the rabi area was largely increased principally in rice crops, of which 22 acres were saved by the tank. The assessments increased by more than 40 per cent. while the working expenses remained the same, which is a satisfactory feature of the year's operations.

4. The average duty of the channels in the kharif and rabi seasons was respectively 39 and 23 acres per cubic foot per second. There is no old irrigation under this tank.

(35).—MADAG TANK.

The rainfall during the kharif and rabi seasons was 19.71 inches compared with 24.88 inches average of previous 22 years. The year's rainfall was fair on the whole but was deficient during June, August, September and November.

2. The area irrigated, the assessments, excluding remissions, the average water-rate and the working expenses, including all charges, compare with those of previous years as follows:—

Period.	Kharif.		Rabi.		Total.		Average water-rate.	Working expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1890-91	573	1,334	369	1,284	942	2,618	2.78	1,095
1891-92	652	1,746	377	1,011	1,029	2,757	2.68	1,203
1886—91 average	454	1,066	299	831	751	1,897	2.53	1,614

The irrigated area during both seasons continued to show an increase somewhat larger than usual due to deficient rainfall and abundant supply. The assessments are also larger and the working expenses were only Rs. 108 in excess of those of the previous year.

3. The average duty of the channels in the kharif and rabi seasons was respectively 110 and 39 acres per cubic foot per second. The measured loss by leakage and evaporation was 3.26 and 3.27 cubic feet per second per mile on the Right and Left Bank canals respectively.

4. Miscellaneous revenue Rs. 152 was derived from the sale of grass, fruit and trees.

5. The principal crop acreages were :—

Garlic 569, rice 272, sugarcane 61 and sweet potatoes 47.

6. The operations of the year show a net profit of Rs. 1,706 or 2.17 per cent. on the direct capital outlay of Rs. 78,354.

7. The total number of trees on the canals over 8 feet high is 3,294 including bábbul 1,337, mango 648, sandalwood 714, nimb 255, tamarind 140. These plantations are for the most part well advanced and should yield good revenue in a few years.

8. The tank from which the two canals draw their supply is formed by the large ancient dam, which in its original state must have made an immense tank. But the dam was breached and the modern canals only tap a depth of $3\frac{1}{2}$ feet of storage, so that this small tank is kept continuously full during the monsoon. Usually its supply lasts up till February; this year it failed in December.

(36).—ASUNDI TANK.

The rainfall of the year during the kharif and rabi seasons at Ránébennur, 6 miles from the tank was 13.68 inches as compared with the average of the previous 24 years 18.85 inches. The year's rainfall was the worst since that of the famine year 1876-77.

2. The tank received small replenishments in May and July and reached its lowest level 6.30 feet above sluice level on 1st October. On 26th October the tank nearly filled, the level being 2 feet below waste weir. The year was the worst on record for replenishments. The catchment is hilly and the tank generally fills annually.

3. The area irrigated, the assessments excluding remissions, the average water-rate and the working expenses including all charges of the year compare with those of previous years as follows :—

Period.	Kharif.		Rabi.		Total.		Average water-rate.	Working expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1890-91	58	263	27	77	85	340	4.00	707
1891-92	63	184	69	215	132	399	3.02	672
1886-91 average	76	257	34	77	110	334	3.04	642

The kharif area was nearly the same as last year but the rabi area (principally garlic 19 acres and jowári 18 acres) increased largely owing to deficient rainfall. The assessments rose by Rs. 59, while the working expenses were less by Rs. 35.

4. The average duty of the canals including the old irrigated area (124 acres) was 128 acres and 86 acres per cubic foot per second in the kharif and rabi seasons respectively.

5. The total revenue (assessed) amounted to Rs. 873, including Rs. 472 as credit from "old irrigation"; as the working expenses amounted to only Rs. 672, there was a net profit on the year's operation of Rs. 201.

6. The question of the damage to the land below the tank from "reh" efflorescence, has been enquired into by this and the Revenue Department, and it is hoped that a solution may be found in thorough drainage. A detailed survey is in progress to ascertain whether this is feasible.

(37).—MAVINKOP TANK.

This tank is managed by the cultivators under the control of the Revenue Department, and no statistics of its working are kept in this department.

2. The enhancement of the water-rates, due to the improvements carried out on this tank in the famine of 1876-77 still remains in abeyance in deference to the opinions of the revenue authorities; consequently Government have obtained no return on the expenditure incurred during 1876-78 in largely increasing the storage of the tank. These opinions seem to have been based on the rayat's statements that they do not make use of more water than before the restoration of the tank. This year it has been definitely ascertained that they used about twice as much as the original contents of the tank, and that they ran it dry. Its value to them in such a season as the past must have been great. The present settlement expires in 1894, and it is to be hoped that the next one will be made in consultation with this department, and that the great benefit received by the rayats without additional payment during the 15 years of the current settlement will be taken into account when settling the new rates.

(38).—GOKÁK CANAL, 1ST SECTION, AND STORAGE WORKS.

1. The Gokák Canal, 1st Section, and Storage works consist of a weir 3,000 feet long and 25 feet high across the Ghatprabha river at Dhupdal forming the head works to a canal commanding 16,663 acres of irrigable land on the left bank. The storage above the weir is 701½ million cubic feet and the duty to be performed by these works is two-fold :—First the supply of a continuous stream of water for the working of the mills at the Gokák Falls, and the second the irrigation of the land under the canal. The works were completed during the year 1890-91 and this review is therefore for the first year the works were in full operation.

2. The cost of the works excluding land was a little less than estimated, but the effects of the monsoon floods showed that some additional works were necessary. These have been described in the Administration Report.

3. A revised estimate was prepared including the Gokák Canal, 1st Section as well as the head works or weir. As no reliable figures of the probable cost of the land could be obtained from the revenue authorities, the revised estimate, as expressly stated, did not provide for the inevitable excess on the estimated cost of the land.

The amount of this revised estimate is Rs. 10,80,284 for direct charges, and the expenditure up to 31st March 1892 was Rs. 10,11,070.

4. The hot weather of 1891 was the first during which the storage was available, and 169 acres of irrigation were at once applied for.

5. The monsoon rainfall was unusually late and the water did not overflow the crest of the weir until the 3rd of July.

Showers however had fallen during March, April and May 1892, giving sufficient replenishment for the supply to the mills (then 27 cubic feet per second) and for the new hot weather irrigation.

6. The long delay in the arrival of the monsoon was followed by a light rainfall on the gháts and a failure of rain in the east of the district so severe that most of the lands remained unsown and the crops on those sown and depending on the rainfall failed. Government consequently proclaimed famine early in 1892 in the Athni, Gokák and Parasgad Talukas of the Belgaum District.

7. The rainfall gauged at the head of the canal compares with the previous year as follows :—

1890-91	...	...	...	24.11
1891-92	...	...	...	19.04

The above deficiency does not however fully represent the scarcity in the districts further east which will be better seen from the following table of rain-fall gauged at six stations along the proposed extension of the Gokák Canal :—

Station.				Average of previous 11 years.	1891.
				Inches.	Inches.
Katoli	...	...	...	21.65	12.59
Mudalgi	...	...	...	22.20	12.84
Mahalingpur	...	...	...	20.73	13.83
Mantur	...	...	...	20.87	14.73
Nagarhal	...	...	...	22.81	12.47
Hadrihal	...	...	...	21.84	8.89

8. The applications for water were therefore numerous and, compared with the previous year, the areas were :—

Year.				Khariif.	Rabi.	Total.
				Acres.	Acres.	Acres.
1890-91...	...	...	...	2,562	1,286	3,848
1891-92...	...	...	...	3,629	2,371	6,000
Increase	...	...	...	1,067	1,085	2,152

The total area applied for was 4,932 and the excess area measured is probably due to the cultivators not knowing the area of the plots of land to be irrigated for the first time.

9. The assessments were :—

				Khariif.	Rabi.	Total.
				Rs.	Rs.	Rs.
1890-91...	...	...	...	4,316	2,884	7,200
1891-92...	...	...	...	6,160	5,281	11,441
Increase	...	...	...	1,844	2,397	4,241

10. The area actually irrigated (6,000 acres) amounted to 36 per cent. of the entire area under command of the canal (16,663 acres) so far as now constructed. This is a very high proportion and is a good measure of the success of the works.

11. The average water-rate was 1.91 per acre against 1.87 of the previous year.

12. In addition to the water-rates Rs. 166 were realized for canal produce.

13. The continuous supply of water to the Mills which had been increased in January 1891 from 17 cubic feet per second to 27 cubic feet per second was

by Government orders increased from commencement of the monsoon of 1891 to 47 cubic feet per second and the revenue derived was:—

Rs. 2,790 for the 1st half-year.
 „ 4,920 do. 2nd do.

Total Rs. 7,710

14. The total assessed revenue from all sources was thus:—

	Rs.			
Water-rates	...	...	...	11,441
Miscellaneous	...	...	...	166
Mills	...	...	...	7,710
				<u>19,317</u>
Total ...				19,317

15. The working expenses were:—

	Rs.			
1890-91	...	...	...	4,422
1891-92	...	...	...	5,883

The increase is nearly all due to the large increase in the area irrigated.

16. Deducting the working expenses (Rs. 5,383) from the assessed revenue (Rs. 19,317) leaves a net revenue (on assessments) of Rs. 13,934, or 1·37 per cent. on capital outlay (Direct charges) of Rs. 10,11,070. This is a favourable result for the first year's operations of the new storage works, and is promising for future extension of the canal.

17. The cost of measuring the area irrigated was Rs. 722, or anna one and pies eleven per acre as against two annas eleven pies in 1890-91. The decrease is due to the larger area irrigated.

18. The average discharge of canal was for—

Kharif	...	...	...	21·82 cubic feet per second.
Rabi	...	...	...	33·99 do. do.

The duty of water obtained was for—

Kharif	...	...	...	166 acres per cubic foot per second.
Rabi	...	...	...	93 do. do.

This is a high duty for rabi; the area irrigated being 2,371 acres of rabi crops plus 778 acres of 8 months and perennial crops included in previous kharif, or total rabi area 3,149 acres.

19. The maximum flood occurred on 28th and 29th July and rose 4 feet above crest and has been noted in the Administration Report.

20. The under-sluices were opened on 4th and closed on 25th October 1891. The delay in opening was due to the late arrival of the monsoon.

21. The year under report has therefore been a most exceptional one, fully showing the great value of irrigation from an assured supply of water.

The area at present commanded by the canal is bounded by the Ghatprabha river and by the Waderhatti nála and beyond this the country was absolutely bare of crops excepting in small patches irrigated from wells and a narrow strip along the banks of the Ghatprabha which had been covered by floods. The entire value of the crops irrigated was this year saved or rather created by a canal. In Table III E. these are estimated at Rs. 1,87,130, but the rates have been kept the same as for ordinary years and probably the value for the past season was more than 30 per cent. higher.

In addition to the actual value of the crops the presence of this island of cultivation in the centre of the barren expanse of Gokák Taluka was a great boon.

22. The water-supply afforded by the works is an additional benefit for which Government draw no direct return and during the past season, when there was general scarcity of water, the canal supply has been most useful.

It is not confined to the area commanded by the canal. The water issued to the mills (47 cubic feet per second) after passing through the turbines runs to waste down the Ghatprabha river and all villages along the banks benefit by the constant stream of water.

Two famine camps were watered by the canal, one at Wadarhatti directly from the canal and another at Tigdi from the waste water from the mills in the Ghatprabha river.

23. Around the edge of the water of the storage tank water was taken for 57 acres, temporary lifts being constructed; it has already been noted in the Administration Report that no damage occurred to lands around the tank from floods, but it seems desirable to note also this direct benefit to these lands.

24. The period for which the existing water-rates were sanctioned expires on the 31st March 1893, and the free use which has been made of the water shows that the existing rates represent but a small portion of the value of the water, and that they can be safely increased without checking irrigation.

PART II.

WORKS IN OPERATION FOR WHICH ONLY REVENUE
ACCOUNTS ARE KEPT.

1. The following table shows the areas irrigated in the different districts in the Deccan and Gujarāt and the consolidated revenue assessed during the year :—

Collectorates.	Number of Works.	Area irrigated.	REVENUE.			REMARKS.
			Irrigation Share.	Land Share.	Total.	
1	2	3	4	5	6	7
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ...	66	10,689	13,210	31,400	44,610	
Kaira ...	2	8,104	28,454	11,636	40,090	
Surat ...	287	12,381	49,391	1,17,154	1,66,545	
Khāndesh ...	82	8,868	57,322	12,255	69,577	
Nāsik ...	271	28,337	1,61,748	37,840	1,99,588	
Ahmednagar ...	2	147	353	132	485	
Poona ...	3	515	2,857	1,015	3,872	
Sātara ...	1	133	505	335	840	
Belgaum ...	67	9,910	29,797	7,617	37,414	
Dhārwar ...	471	64,646	1,71,084	42,768	2,13,852	
Bijāpur ...	15	762	3,407	845	4,252	
Ratnāgiri ...	3	1,105	4,988	374	5,362	
Total ...	1,270	145,597	5,23,116	2,63,371	*7,86,487	* Net consolidated assessment.

2. The following table shows the actual expenditure and receipts for the year 1891-92 on all works in the Deccan and Gujarāt for which only Revenue Accounts are kept :—

Collectorate.	EXPENDITURE.										ACTUAL RECEIPTS.							
	Direct Charges.								Indirect Charges.	Grand Total.	Direct Receipts.			Indirect Receipts.	Grand Total Direct and Indirect Receipts.	Refunds of Revenue.	Gross Receipts less Refunds.	
	Extensions and Improvements.	Maintenance and Repairs.	Establishment.		Tools and Plant.	Profit and Loss.	Total Direct Charges.	Share of Collection Charges.			Water-rises from Irrigation.	Miscellaneous.	Total Direct Receipts.					Share of Consolidated Revenue.
			Direction.	Executive.														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
Ahmedabad	...	474	238	1,848	23	...	11,385	1,330	15,696	91	...	91	13,210	13,301	...	13,301		
Kaira	7,024	1,778	...	...	...	...	...	2,851	5,399	354	234	618	28,454	29,062	...	29,062		
Surat	35	308	10	69	5	...	427	4,972	5,399	...	327	327	49,391	49,718	...	49,718		
Nasik	6,137	7,451	740	33,443	490	...	59,352	16,291	81,875	1,157	285	1,442	1,61,748	1,63,190	15	1,63,175		
Khairabad	6,263	4,828	...	...	...	...	59,352	5,732	...	...	66	57,322	57,388	...	57,388			
Ahmednagar	...	...	...	7,649	...	...	7,649	35	7,684	...	11	...	358	364	...	364		
Poona	...	462	14	93	...	...	569	354	923	686	...	686	2,857	3,543	...	3,543		
Satara	...	...	...	...	10	...	...	50	...	...	...	...	...	505	...	505		
Belgaum	...	49	1	10	...	...	...	0	2,980	3,040	...	...	29,797	29,797	...	29,797		
Dhule	8,630	13,238	508	19,418	351	...	37,141	17,291	54,432	424	732	1,156	1,71,084	1,72,240	...	1,72,240		
Bijapur	...	141	4	44	...	...	189	256	545	151	338	479	3,407	3,889	...	3,886		
Ratnagiri	...	150	5	31	...	...	195	499	694	...	...	...	4,988	4,988	...	4,988		
Total	23,089	28,898	1,518	62,605	899	...	1,16,967	52,651	1,69,648	2,863	2,003	4,866	5,23,116	5,27,982	15	5,27,967		

3. The total amount of revenue realized from and the working expenses of this class of works during the past three years were as follows :—

	1889-90.	1890-91.	1891-92.
	Rs.	Rs.	Rs.
Revenue realized ...	5,31,793	5,27,369	5,27,967
Working expenses...	1,96,228	1,96,256	1,69,648
Net Revenue ...	3,35,565	3,31,113	3,58,319
Percentage of Working Expenses to Revenue ...	36.89	37.21	32.13

4. The expenditure from contributions and from Pátphála funds on all works for which only Revenue Accounts are kept for the year 1891-92 is as shown in the table below :—

Collectorate.	EXPENDITURE.			REMARKS.
	Contributions.	Pátphála Fund.	Total.	
1	2	3	4	5
Ahmedabad	...	...	...	
Kaira	...	...	...	
Surat	...	...	...	
Násik	1,031	1,826	2,857	
Khándesh	...	163	163	
Ahmednagar	...	...	...	
Poona	101	...	101	
Sátára	...	...	...	
Belgaum	...	...	...	
Dhárwár	1,526	...	1,526	
Bijápur	...	...	...	
Ratnágiri	...	...	...	
Total	2,658	1,989	*4,647	* Accounted for in the Finance Accounts under "Works for which neither Capital nor Revenue Accounts are kept."

AHMEDABAD DISTRICT.

5. The following new works were carried out during the year under report
 viz., (1) the improvement and extension of the Naika Khári Irrigation Sluices. channel, estimated to cost Rs. 16,274, and sanctioned in Government Resolution No. 24 A. I.—335 of 20th February 1891, on which an expenditure of Rs. 5,353 was incurred during the year under report, (2) the construction of a double sluice across the Dhatal Branch completed at a cost of Rs. 410, and (3) the construction of two sluices across the Dhatal channel, which was completed at a cost of Rs. 491. Repairs to the bund at Dhamatwan were also carried out during the year at a cost of Rs. 859.

6. The receipts for the year 1891-92 amounted to Rs. 48,566, and were derived from the following sources :—

	Acres.	Assessment.
I.—Irrigation above the Kalambandi villages	851	Rs. 4,552
II.—Irrigation from tanks fed by the river Khári	249	1,942
III.—Irrigation from Khári sluices proper	8,415	42,072
IV.—Irrigation below the Kalambandi villages.	.....	.....
Total	9,515	48,566

The area irrigated is nearly the same as during the previous year.

7. The mean rate of assessment was Rs. 5.35 on lands for which water was taken by lift above the Kalambandi villages, and Rs. 7.80 for lands irrigated by the tanks fed from the river Khári. On lands under the Khári sluices proper

the rates are consolidated, the average share per acre for land and water being as under :—

	Land share.			Water share.			Total.		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
Government land	1	15	1	5	2	6	7	1	7
Alienated land	2	1	6	5	5	9	7	7	3
Inámi land consolidated ... ..	.....			.....			8	2	8
Assessment jiráyat land ... ..	.....			3	0	10	3	0	10

8. The working expenses during the year exclusive of charges of revenue collections amounted to Rs. 1,146.

9. A sum of Rs. 116 was expended in surveying certain tanks in the Dholka Táluka. Projects for improving some of the Old Works. tanks are ready, but they were not submitted for sanction as the conditions laid down in Government Resolution No. 109 W. I.—1379 of 22nd July 1890, in regard to substantial contribution by the villagers were not complied with.

KAIRA DISTRICT.

10. The work of improvements to the Chanvaya Tank, which was in progress in 1890-91, was completed during the year under report at a total cost of Rs. 1,957, the expenditure during 1891-92 being Rs. 771. The work has been fully described in the previous report.

SURAT AND BROACH DISTRICTS.

11. During the year under report repair works were at a stand still owing to non-receipt of village contributions towards them. A large number of tanks were surveyed during the year, and plans and estimates prepared for repairs, and these will be carried out as contributions are received. The expenditure on surveys amounted to Rs. 245.

12. A small expenditure was incurred on the following tanks at the close of the year when contributions had been paid in :—

	Rs.
Atal Tank R. S. No. 78 of Bulsár	35
Ambada Tank R. S. No. 412 of Jalálpur	62

13. The total area irrigated and the consolidated revenue assessed on irrigation tanks in the Surat District as reported in Canal Return No. VIII for the year 1891-92 by the Collector of Surat is as under :—

District.	Area irrigated.	Net consolidated assessment.	Irrigation share.	Land share.	Remarks.
	Acres.	Rs.	Rs.	Rs.	
Surat	12,381	1,66,545	49,391	1,17,154	No return submitted by the Collector of Broach.
Broach	...	...	...	...	

14. The management of irrigation tanks rests with the Revenue Department, and hence no separate establishment is entertained on this account. The receipts are also realized by the revenue authorities.

NA'SIK DISTRICT.

15. There are 191 permanent bandharas situated in that part of the Násik Collectorate, drained by the Godávári river. Almost all these works were constructed before British rule, and since 1878 they have been in charge of the Public Works Department, and

repaired and improved from time to time by Government, aided by contributions from the cultivators.

16. The Godávári and its tributaries, on which old irrigation works exist, all rise in the western gháts or ranges running eastward from it; they are supplied therefore by mountain rainfall and are subject to occasional very heavy floods. The supply to the end of November is generally ample, but decreases steadily throughout the cold and hot seasons.

17. These old bandharas bear evidences of having been gradually brought to their present state; many evidently originated in a simple brushwood and earthen dam thrown across the stream after the monsoon, this work being often strengthened by upright stones fitted into the rocky bed of nála, the object being to raise the water surface and not to give storage. From this a channel was made along the top or slope of river bank until the level of fields was reached. The inconvenience of this temporary arrangement was the annually recurring cost of construction and frequent accidents due to late floods; then a masonry weir or bandhara was generally made between the banks, but in many cases this must have been made in stone and mud, and from time to time the work has been extended either by lengthening the weir, making a screen wall across irrigating channel, providing the irrigating channel with a safety weir, and otherwise making them capable of resisting without damage any ordinary flood. Bandharas still exist in all stages of progress, and this department is now gradually improving them so as to render them capable of resisting without injury extraordinary floods.

18. The great fault of almost all these old bandharas is:—first that the channel from them often runs for a considerable length along the river bank and below even the ordinary flood level of the river; they are thus continually exposed to damage from floods; second that there is no regulating apparatus at head of channel, the safety weirs being relied on exclusively to prevent excess water running down the channels.

Other occasional faults of old bandharas are insecure and leaky foundations, porous masonry and insufficient discharging power; these faults are being gradually remedied, bandhara by bandhara, as funds are available.

19. No actual rules appear to exist as to by whom these works should be repaired, but it is customary to require the people to clear bed silt, repair banks, and generally to do all repairs which can be done by unskilled labour, and consequently when Government carry out thorough repairs or improvements they are called upon by the Executive Engineer to pay a fixed sum as contribution, the amount of which is settled in consultation with the Collector. The people gradually allow the works to fall into disrepair, and it seems doubtful if there is any practical legal method of compelling them even to properly clear their channels.

20. The distribution of water and annual repairs is managed by the users of the water, who generally appoint a pátkari who is employed by and is under the orders of the people and not of this department.

21. The distribution of water is by wára or rotation, and all fields or parts of fields assessed at consolidated rate are entitled to receive a share of the supply; if lands in other numbers are also supplied, Government can only claim water-rate on such extra land if Government money has been expended on improvements. A good deal of land thus obtains benefit from these bandharas without payment, so that expenditure on improvements not only maintains existing revenue but is likely to increase it.

22. The supply not being supplemented by storage falls rapidly after December until May, and when the supply is at its minimum, irrigation is only carried on during the day, the night flow being allowed to fill up such small storage as exists above the bandhara. The sandy nature of material with which the river above the bandhara gets filled, offers some slight and often the only storage. Attempts have been made to supplement the hot weather flow by constructing tanks above the bandhara, but in no instance were these attempts successful. Thus the tank at Chándor has been silted up almost to waste weir crest for many years, and all storage is evaporated long before it is required,

The tank at Maparvadi near Sinnar was breached so long ago that all tradition as to the cause of failure is lost. The Dindori Tank is still in existence, but holds no, and apparently never held, water, which appears to filter away into the sub-soil through a deep well made opposite and at entrance to outlet culvert. The mountainous character of their small catchment basins accounts for the rapid silting. And the geological formation below the surface of ground is not favourable for foundations for high earthen dams. The restoration of two of these tanks is under discussion and rough preliminary plans have been prepared.

23. During the year under report 16 sets of plans and estimates for repairs, costing Rs. 2,989, were prepared and sanctioned, and 13 sets of plans and estimates for extensions and improvements costing Rs. 2,346, besides 10 sets of plans and estimates, were prepared but were not finally disposed of. In addition to this, preliminary inspection was made of 93 old irrigation works.

24. Given below is the area cultivated during the last three years, and the total average assessment.

Years.	Areas.	Assessment.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1888-89 ...	17,858	81,154	26,036	1,07,190
1889-90 ...	17,896	81,072	26,151	1,07,223
1890-91 ...	17,885	81,069	26,149	1,07,218
Total ...	53,639	2,43,295	78,336	3,21,631
Average ...	17,880	81,098	26,112	1,07,210

25. These old works benefit 126 villages by improving the supply of water for cattle and enabling vegetable to be grown during the dry season.

26. Sixteen old irrigation works were repaired during the year, viz:—

- 3 In Násik.
- 1 In Sinnar.
- 7 In Dindori.
- 1 In Niphád, and
- 4 In Chándor Tálukas.

	Rs.
at a total expenditure of ...	2,620
In addition to this the expenditure incurred to the debit of maintenance and repairs was as follows:—	
(a) Maintaining establishment for survey for repairs of Bandharas in the Godávári Basin ...	165
(b) Refund of deposit. Repairs to Malyacha Bandhara at Chincholi in Sinnar ...	90
(c) Maintenance and repairs to old Wadali Canal ...	114
	<u>2,989</u>

27. Twelve old irrigation works were improved, viz:—

- 1 In Násik.
- 2 In Sinnar.
- 5 In Dindori.
- 1 In Niphád, and
- 3 In Chándor Tálukas.

at a total expenditure of Rs. 2,346 including Rs. 10 on account of compensation for land taken up in 1883 for Chikhalambe Bandhara, and Rs. 46 for maintaining establishment for bandhara extensions and improvements in the Godávári basin.

28. Of the total sum Rs. 5,335 (estimates for the above works) including improvements and repairs, the land owners interested contributed Rs. 1,051, or

a percentage of Rs. 20. This must be taken as an index of the value they attach to these works.

29. The total number of works inspected and of which survey was made during the year was 20; and 97 old bandharas were also inspected, with a view to deciding if they were in need of any repairs or improvements.

30. The total area cultivated on all these works was 17,816, and the water share of revenue derived was Rs. 80,804, giving an average assessment per acre of Rs. 4-50.

31. The principal crops are rice in Sinnar and Dindori during the monsoon, wheat in all talukas during the rabi, and sugarcane, ground-nuts and garden produce for as much of the land as water suffices. Generally when garden crops are grown, the supply is supplemented by well irrigation in the dry hot season.

32. The share of assessment on account of water on bandharas is permanently fixed according to the nature of the soil and kind and market value of crops, nearness to large towns, &c., in precisely the same way as the land share of consolidated revenue, so that the rate is much higher near large towns than in remote villages.

33. The collection of water assessment is left with the Revenue Department and is collected in the same way as the land tax, whether water is used or not.

34. A statement of rainfall in different talukas of this district is given below :—

No.	Name of Taluka.			Rainfall, 1891-92.	
				In.	c.
1	Sinnar Taluka	...	...	19	45
2	Násik do.	...	...	25	99
3	Dindori do.	...	...	24	58
4	Niphád do.	...	...	17	42
5	Chándor do.	...	...	21	11
6	Yeola do.	...	...	17	11

35. During the year the monsoon was late, sufficient for kharif, but very scanty for rabi. Rice plantations on bandhara suffered. Rivers and nálas in the basin were fed earlier, but elephant rains held off and water-supply began to fail at the end of cold season. The rabi crops suffered, but perennial crops had to depend on wells.

36. During the year there were 4 calls for converting temporary bandharas into permanent structures. Two proposals had to be abandoned for inadequate return, one is sanctioned and one is approved of by the Collector.

37. The following table shows the area assessed as irrigated and the consolidated revenue assessed on 2nd Class Revenue Works during the year 1891-92 :—

Number.	Talukas.				REVENUE.			
					Area irrigated.			
					Irrigation share.	Land share.	Total.	
					Acres.	Rs.	Rs.	Rs.
50	Násik Taluka	...	...	...	2,756	8,595	4,258	12,843
45	Sinnar Taluka	...	...	...	4,457	21,988	6,470	28,458
27	Dindori Taluka	...	...	...	3,053	15,622	4,607	20,229
27	Niphád Taluka	...	...	...	4,592	21,056	7,177	28,233
40	Chándor Taluka	...	...	...	2,812	13,126	3,413	16,539
2	Yeola Taluka	...	...	...	176	427	77	504
191	Total	...	...	...	17,816	80,804	26,002	1,06,806

KHANDESH IRRIGATION DISTRICT.

38. These works have been fully described in the last year's revenue report (see page 55 of the printed report) and there is nothing further to add this year.

39. The works, which were repaired or improved during the year and those for which surveys and projects were prepared, have been described in paragraphs 21 to 24 of the Administration Report of Irrigation Works for 1891-92, page 10.

40. The following is a summary of the area irrigated and revenue derived during the year :—

	Khândesh.	Nâsik.	Total.
	Acres.	Acres.	Acres.
Area irrigated at consolidated rates...	(a) 10,583	10,521	21,104
Area irrigated at separate water-rates	.....	(d) 360	360
Total	10,583	10,881	21,464
	Rs.	Rs.	Rs.
Consolidated revenue	(b) 80,307	92,782	1,73,089
Irrigation share of consolidated revenue	(c) 58,512*	80,944	1,39,456
Separate water-rates	.....	(e) 1,033	1,033
Total	58,512	82,027	1,40,539

* Exclusive of Rs. 6,643 credited to Revenue Account of Lower Pânjra River Works.

(a) Inclusive of 1,715 acres irrigated under the Lower Pânjra River Works.

(b) Inclusive of Rs. 10,730 on account of assessment on ditto.

(c) Do. Rs. 1,190 revenue before improvements of the Lower Pânjra River Works.

(d) Exclusive of 21 acres 22 gunthas irrigated under the Songir Bandhâra.

(e) Do. Rs. 73-7-1 on account of revenue from the above Bandhâra.

41. The working expenses (direct) amount to—

	Rs.
Original Works and Improvements	10,565
Repairs	9,833
Establishment	28,535
Tools and plant	313
Refund of Revenue...	15
Profit and loss	...
	<u>49,261</u>

42. The net revenue on account of water-rates after allowing for working expenses amounts to Rs. 91,238.

43. The unrealized balance of revenue from the works improved by the State in the Nâsik District was Rs. 515 at the close of the year. This amount has since been realized.

AHMEDNAGAR DISTRICT.

44. In the Ahmednagar Collectorate there are only two works situated in the Akola Tâluka, viz :—

1. Sâvargaon Bandhara.
2. Gardani

and the information regarding revenue from and expenditure on them is given in tables under paragraphs 1 and 2 of this part.

POONA DISTRICT.

45. The following are the works in Poona Collectorate for which only revenue accounts are kept :—

1. Dam at Kasur.
2. Dam at Wadaz.
3. Dam at Agar.
4. Dam at Náráyangaon.
5. Dam at Pátas.
6. Tank at Wadhana.

The description of these works was given in the revenue report for 1881-82.

46. No expenditure was incurred on these works for maintenance and repairs during the year 1891-92, except Rs. 457 on repairs to Náráyangaon Bandhara and sluices of the two channels.

BELGAUM DISTRICT.

47. In the Belgaum Collectorate there are 69 old irrigation tanks, each irrigating over 50 acres of land. The total area irrigated is 10,278 acres of which 7,349 are Government and 2,929 inám. The consolidated revenue derived is Rs. 52,155, of which Rs. 41,726 is classed as irrigation share and Rs. 10,430 as land share.

48. A complete list of these tanks was published as an appendix to the printed Irrigation Revenue Report of 1889-90.

49. These tanks are situated in the talukas of Belgaum, Sampgaoon and Khánápur, which are the three western talukas where the rainfall is good. The tanks act as regulators to the rain-fall, storing the run-off from heavy falls of rain and issuing the water during breaks in the rain for rice, which is the crop chiefly cultivated. None of the tanks are capable of irrigating land all the year round. During the monsoon of 1891 the rain was very irregular and the tanks were of great assistance to the lands commanded.

50. The catchment areas are generally small, and the tanks are able to store most of the run-off, and to regulate this discharge of the nálas; so that the overflow at the escapes is small. Where the catchment areas are larger the embankments of the tanks are frequently breached, and the provision of efficient waste weirs is necessary. These, as a rule, are now wanting.

51. The out-lets are generally of simple pattern, usually a masonry drain with one or more openings, closed by a plug or a wooden board plastered round with mud. They are seldom watertight, but they can be improved and better control obtained over the water.

52. Plans and estimates had been sent in for the improvement of Komarkeri tank at Basarkod, but as they were not sanctioned and the whole subject of the repairs to these tanks was under consideration, no work could be done. The surveys of two of the tanks were commenced, but on account of the famine in the eastern districts the establishment had to be withdrawn to meet the extra press of work.

DHÁRWA'R IRRIGATION DISTRICT.

53. The system of small irrigation reservoirs or tanks for each village, which is common in Madras and Mysore, attains its greatest development in the Dhárwár Collectorate, the southernmost part of the Presidency, but is practically confined to the westernmost parts or the "Málad," where the rainfall is most certain and abundant. It is not known when and by whom these ancient works were constructed, but it is believed that they were chiefly made during the Vijayanagar or Ane Gundu dynasty (A. D. 1335—1570) and more especially during the reign of Krishna Raya (A. D. 1508—1542.)

The following table will serve to indicate the position, number, size and value of these tanks. It is chiefly abstracted from the printed list of tanks, each irrigating over 50 acres drawn up in 1884, with corrections to bring it up to date. In addition to those enumerated are some 3,320 tanks, each irrigating less

than 50 acres, which are managed entirely as regards maintenance and repair by the irrigators and are not dealt with by this department. Many of these are proprietary tanks, each belonging to one owner :—

Name of Táluka.	Total area in square miles.	Total population (1881 census.)	Population of irrigated villages (1881 census.)	No. of irrigated villages.	No. of tanks.	Area occupied by Tanks acres.	IRRIGATED AREA ACRES.			IRRIGATION REVENUE RS.			Average water-rate Rs. per acre.
							Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	
Vide Canal Return No. VIII.													
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Frubli	311	*118,188	*3,001	6	8	1,013	1,013	...	1,013	3,382	...	3,382	3'34
Gadag	699	124,713	...	1	1	46	46	...	46	154	...	154	3'35
Baukapur	343	85,602	21,384	43	67	9,114	8,677	437	9,114	18,361	2,203	20,564	2'26
Karajgi	442	90,306	15,830	11	11	2,032	1,210	822	2,032	5,879	3,641	9,520	1'69
Kanebennur	405	92,978	9,917	3	3	591	...	591	591	3,220	...	3,220	5'45
Kod	409	81,437	41,864	76	115	13,575	13,369	76	13,575	56,393	159	57,091	2'73
Rajahatgi	379	65,360	33,682	58	68	9,923	9,922	...	9,922	24,813	...	24,813	2'60
Dharwar	425	1,27,094	16,045	13	19	2,504	2,301	293	2,504	7,038	1,582	8,620	3'92
Hangal	526	74,506	47,184	89	169	25,759	25,402	357	25,759	65,817	913	66,730	2'47
	3,692	3,53,068	158,946	316	471	64,646	62,070	2,576	64,646	1,59,277	11,807	1,71,084	2'63

* Note.—The total population of these tálukas in 1881 being 822,907, the proportionate total population of the irrigated villages in 1891 is 184,642; no details of this are available.

The irrigation in Hangal Táluka alone is more than one-third of the whole district both in area and assessment. If the average water-rate Rs. 2'65 per acre of the whole district, were raised to the average for Kanebennur Táluka (Rs. 5'45), the total irrigation revenue would be increased from Rs. 1,71,084 to Rs. 3,51,852.

54. (a) Although the western parts of the district have generally certain and plentiful rain, yet it is for the most part of a light character and is interrupted by breaks,

during which the rice-crops, if not artificially watered, would suffer greatly. The storages in the tanks permit of this artificial supply being given, and their value thus increases according to the deficiency of the rainfall, and the extent by which they are able to supplement it. The district is liable to heavy rainfall as late as December and as early as April, and the tank system permits the impounding of almost all the run-off produced by these extra monsoon showers.

(b) The country consists generally of metamorphic schist with vertical stratification through which the rainfall descends to a great depth below the beds of the water-courses, so that, with the exception of the large rivers, there are hardly any perennial, or even long flowing streams in the district. Under these conditions a system of bandharas or weirs would be practically useless.

(c) The tanks being comparatively small, it is possible to locate them separately in the lands of many villages; all available catchments are thus utilized and each village has practically the sole management of its water-supply.

(d) The irrigated area is a compact one situated close to the tank, and can thus be most economically watered.

(e) The system of consolidated land and water assessment is a remunerative and easily worked one for Government, while it secures to the rayats a greater proprietary right to the water and less interference by subordinate officials.

55. (a) The tanks are practically all shallow sheets of water from which an excessive amount is evaporated. As they silt up, and they are now on the average silted up from 3 to 5 feet, this loss from evaporation becomes greater and their storage capacity less.

(b) They are usually run dry in February, and a good replenishment in one year very rarely lasts to supplement a bad one in the succeeding

year. Owing to the limited catchment areas of the tanks and to the large proportion of terraced lands in them, the run-off is very small, and in bad years with light rainfall, such as that now under report, the replenishments are very defective. In a severe famine they would be practically useless as was proved to be the case in 1876-77.

(c) The system of having numerous small works scattered all over the district is an expensive one to construct, maintain and administer. The cost of construction is so great, that it will only be in very exceptional cases that the British Government will make new works. The tank embankments, which are generally of great length, are constantly suffering from natural causes and by the traffic of men and animals over them. The administration of the works is rendered difficult by their number and isolated situations.

(d) The tanks, being constructed in valleys, generally occupy the most fertile part of the country, and the area thus lost to cultivation is very considerable, as may be seen from the table in paragraph 53 above, where the area of irrigation per acre of tank bed is seen to vary from 9.75 acres in Kalghatgi, the most westerly, to 1.22 acres in Karajgi, one of the most easterly of the irrigated talukas. No crops can be grown on the tank beds but they are useful as grazing areas.

To sum up, it may be stated that the tank system would be far too expensive to construct anew, but, as it now exists, it is, despite certain defects, a most valuable one to maintain, being suited to the habits of the people and producing a large revenue to Government.

56. (a) *Catchments*.—The tanks, as a rule, consist of low earthen dams formed at favourable places across small local streams. The catchment areas are generally small from 1 to 2 square miles in extent. Some are much larger; e.g., the Hegeri Tank at Háveri has a drainage area of 69 square miles; but in these cases there are chains of tanks in the same catchment up the main and tributary streams.

(b) *Dams*.—The dams are usually very long in proportion to the body of water impounded, partly because the side slopes of the country are flat, and partly from the old plan of forming long, narrow arms, either for the location of the waste weir at a safe distance from the main dam and irrigated area, or for the interception of a larger catchment. Many of them have a top width of from 12 to 20 feet and over, and carry cart-roads which are useful for traffic but are detrimental to the life of the dam. The water slopes are frequently pitched with large stones laid horizontally in steps to form a nearly vertical slope. Towards the west, the dams are often covered with trees and undergrowth. The excellence of the reddish gravelly soil of which they are composed, and which has become greatly consolidated during many years, enables them to stand being topped in severe floods without receiving much damage. The repairs now effected consist in raising the dam to a safe height above floods and in constructing or repairing pitching where necessary.

(c) *Waste weirs*.—The old waste weirs are chiefly earthen channels at the end of the tank arms. As is usually the case with native works, the provision for the discharge of heavy floods is insufficient and under recent orders from Government, all new weirs are as a rule to be designed to pass off a discharge equivalent to a run-off of 1" per hour from the entire catchment area. The Dhárwár catchments however differ greatly from those met with in the Deccan, and after some further experience of the new weirs, it may be found that this extent of provision is not necessary. The natural slopes of the country are usually very flat, and the lower parts of the valleys are extensively terraced and have in them numerous small tanks and field ponds. All of this largely reduces the intensity of the run-off, which is seldom great owing to the general lightness of the rainfall. It is true that the breaching of an upper tank would tend to cause a run-off to a lower one

greater than the natural discharge. Such breaches are generally small, and, owing to the small inclination of the country, the hardness of the dams and the short duration of floods, cause but little damage. The chief objection to them is the loss of valuable storage they entail. They are frequently avoided by the rayats deepening the waste channel when they see that the dam is in danger.

The old waste channels have generally been eroded, and the F. S. contents of the tanks have thus been diminished. The rayats endeavour to regain this capacity by forming small earthen banks across the weir. The objections to this are that these banks, being left unremoved may endanger the main dam in future years and may submerge valuable land on the margin of the tank. In order to fix the tank's F. S. level permanently in all the repair now undertaken, either masonry or pitched apron waste weirs are constructed.

(d) *Outlets*.—The old native outlets for the larger tanks consist of small slabbed conduits under the dam with a regulator in the tank. The regulator is formed of vertical stone pillars carrying at intervals cross slabs which serve as guides to a pole having at its end a wooden conical plug controlling the discharge through a hole pierced in the crown of the conduit. In the smaller tanks the outlets are simple cuts in the dams which are closed with earth and brushwood, when no further discharge is required. This arrangement tends to the formation of breaches and to the loss of replenishments and storage. As a rule there are two outlets to each tank, one on each bank of the valley.

In repairing the tanks, masonry or iron pipe outlets are constructed and these improvements, which give the rayats an effective control over their supply, are much appreciated.

(e) *Channels*.—The channels from the tanks are merely field distributaries of small size and their repair and management are left in the hands of the irrigators.

(f) *Catchwater drains*.—In addition to intercepting the flow down the main valley, many tanks are enabled by catchwater drains to impound the run-off from additional outside catchment areas. These feeders are generally small drains, but, in the case of some of the larger tanks, are of considerable size with beds up to 50 feet in width. The right to water is jealously guarded, and, in effecting repairs to an upper tank, care has to be taken not to interfere with the existing supply of lower ones. In some parts there are continuous feed channels passing the waste weir spill of one tank into another, and, generally, over the whole irrigated district the rainfall run-off is utilized to the greatest advantage.

(g) *Irrigated area*.—The irrigated area has been most carefully terraced after many years of levelling by excavation, embankment and silt deposit. The terraces are from 12" to 18" high, are narrow and irregular, following the natural contour of the ground. The irrigated area is divided into two chief classes—garden and rice land. In the former cocoanut and betel palm are chiefly grown, while in the latter, rice is the principal crop.

57. Besides the tanks there are five canal systems, all in Hāngal Tāluka.

Old canal systems. In the printed list the direct irrigation from them is given as 3,055 acres with a consolidated assessment of Rs. 9,274. These canals, however, are also feeders of tanks and are thus the means of supplying a much larger area with water. The principal one, the Dharma Canal, has in this way dependent on it an irrigated area of 7,159 acres producing a consolidated assessment of Rs. 27,227. Projects for restoring this canal have been under investigation since 1870; recently the large majority of the irrigators have come forward with promises of large subscriptions, and it is hoped that a self-supporting repair project will be devised under the supervision of this department.

The chief defects of these canals are the almost entire absence of cross drainage works, insufficient bed slope and faulty alignment. These lead to excessive silting, and without annual clearances they must deteriorate. It is difficult to get the different villages on one canal to co-operate in repairs or to

share the water fairly, and the only permanent remedy appears to be for Government to take the responsibility of the supervision and maintenance.

Receipts from and expenditure incurred in maintaining the system.

58. The following table compares in rupees the actual expenditure incurred by Government (*i.e.*, exclusive of the rayats' contributions) and receipts for the year with the averages for the previous five years :—

Period.	EXPENDITURE.									ACTUAL RECEIPTS.						
	DIRECT CHARGES.								INDIRECT CHARGES.	Grand Total.	DIRECT RECEIPTS.			INDIRECT RECEIPTS.	Grand Total Direct and Indirect Receipts.	
	Extensions and Improvements.	Maintenance and Repairs.	Re-establishment.		Tools and Plant.	Refunds of Revenue.	Total direct charges.	Share of collection charges.			Water-rates from irrigation.	Miscellaneous receipts.	Total direct charges.			Share of consolidated Revenue.
			Direction.	Executive.												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1891-92	...	3,630	18,236	506	19,418	351	...	37,141	17,201	54,342	424	732	1,156	1,71,084	1,72,240	
Average 1886-91	...	23	18,721	558	23,240	928	...	43,575	16,788	60,373	539	515	1,054	1,67,693	1,68,557	
Increase	...	...	3,607	...	...	...	...	468	...	...	...	...	102	8,591	3,993	
Decrease	...	...	6,486	52	3,922	577	...	6,434	...	6,081	116	...	...	...	...	

Analysis of cost of maintenance and repairs.

59. The following table compares in rupees the cost to Government and to the rayats of the works executed and the revenue derived during the year with those of the average of the previous five years :—

Period.	COST OF MAINTENANCE AND IMPROVEMENTS.			AMOUNT OF OTHER CHARGES.		Total Government Expenditure.	Total Revenue.	Percentage of Government Expenditure on works to Government Total Expenditure.	Percentage of Government Expenditure on Works and to Total Revenue.	Percentage of Government Expenditure to Total Revenue.
	Total.	Contri- bution by Irrigators.	Govern- ment Ex- penditure.	Government Expenditure.						
1	2	3	4	5	6	7	8	9	10	
1891-92	18,392	1,526	16,866	37,476	54,342	1,72,240	31.04	9.79	31.66	
Average 1886-91	21,495	2,746	18,749	41,624	60,373	1,68,557	31.06	11.12	35.82	
Increase ... ..	...	...	...	.....	...	3,683	...	...	...	
Decrease	3,103	1,220	1,883	4,148	6,031	...	...	...	...	

The percentage of Government expenditure on works to total revenue (column 9) is very small; if this expenditure is increased, it will not affect the total Government expenditure (column 6) proportionately (*vide* column 8) provided the amount of other charges (column 5) will be only slightly increased. To ensure this it is necessary that the repairs be carried out on a general plan (*vide* para. 11 below), whereby the existing establishment can be utilized to the greatest advantage.

60. The following table compares in rupees the total amount of irrigation revenue realized from, and the working expenses incurred during, the year with those of previous years :—

Particulars.	1886-87.	1887-88.	1888-89.	1879-90.	1890-91.	Average, 1886 to 1891.	1891-92.	Increase.	Decrease.
1	2	3	4	5	6	7	8	9	10
Revenue realized	1,65,203	1,65,015	1,66,969	1,72,750	1,72,855	1,68,557	1,72,240	3,683	...
Working Expenses	70,530	60,685	61,714	47,396	66,971	59,459	54,342	...	5,117
Net Revenue	94,673	1,04,330	1,15,243	1,25,354	1,05,884	1,09,098	1,17,898	8,800	...
Percentage of Working Expenses to Revenue	42.7	36.8	30.97	27.4	38.74	35.28	31.56	...	...

While the revenue has been steadily increasing, the working expenses have diminished greatly on account of less expenditure on both establishment and repairs.

61. Out of the 473 tanks in the printed list, 94 have been thoroughly repaired since 1869-70 up to the end of the year under report, at a cost exclusive of contribution of Rs. 3,31,856 for works only. As practically the remaining tanks have not been repaired since their construction; and as they are peculiarly liable to damage and deterioration, this rate of progress in repairs is insufficient to maintain the system, and, if not hastened, must lead to diminished revenue to Government and prosperity to the rayats. That this is sure to be the case is evidenced by the numerous ruined tanks scattered all over the district.

This question has long attracted the attention of Government and a special local committee was appointed in 1890 to consider it. It has been estimated that it will take a capital sum of Rs. 15,00,000 to put all the tanks in repair and an annual charge of Rs. 75,000 to maintain them.

The final orders of Government were received in September 1892, and they will be more appropriately published and results discussed in next year's report.

BIJAPUR DISTRICT.

62. There are 17 old irrigation works in the district, and a short description of each is given below. When necessary, their repairs are carried out by this department.

1. *Sirúr Tank (Bágalkot Táluka).*—There are two tanks situated on the east side of the village of Sirúr, an upper and a lower tank on the same nála. The dam of the upper tank is of earth with stone pitching on both sides. There is one masonry outlet in it. The dam of the lower tank is of dry stone rivetment wall at face backed with earth. It has a waste weir about 25 feet long and two outlets. The area of the tank is 48 acres and 32 gunthas.
2. *Ban Shankari Hond.*—This Hond is situated at the village of Tolachgud in Bádámi Táluka. It is a square masonry-well.
3. *Gowanki Tank.*—This tank is situated in the village of Gowanki in Bádámi Táluka. It is bounded by hills on the south, west and north and is formed by an earthen dam with stone pitching on both sides on the east. The waste weir is on the south side of the tank.
4. *Chilapur Stream.*—This is a channel cut on the side of the nála running through the village of Chilápúr in Hungund Táluka.
5. *Hireupnal Stream.*—This is a channel about two miles in length, cut from the upper side of the main nála of Ilkal.
6. *Konnur Stream.*—This channel is cut from the main nála about 15 feet above the Palthi stream. It is not in working order.
7. *Palthi Stream.*—Is cut by the side of Ilkal nála. It is about $1\frac{1}{2}$ miles in length and 2 feet broad and $2\frac{1}{2}$ feet deep.
8. *Tolachgud Tank.*—This tank is formed by a masonry bund thrown across the Saraswati nála and is known by this name. The dam is in good order. It is situated in Bádámi Táluka.
9. *Nandikeshwar Tank.*—This tank is situated in Bádámi Táluka in the village of that name. It is formed by damming a water-course with an earthen bund faced with stone pitching. It has one outlet which is out of order.
10. *Timságar Tanks.*—There are two tanks. They are situated in the village of Timságar in Bádámi Táluka. They are formed by earthen dam with stone pitching on the face. The areas of the tanks are 9 acres 3 gunthas and 20 acres 39 gunthas respectively.
11. *Hirekeri Tank.*—This tank is situated in the village of Párvati in Bádámi Táluka. This tank is formed by an earthen dam with stone pitching on the north. It has one out-let from which water is taken to a smaller tank near it and thence for irrigation purposes.

12. *Ganjikeri Tank*.—This tank is also situated in the village of Párvati. It is formed by a dam which consists of a stone rivetment wall on the face backed by earth. There is one sluice gate in the middle and a waste weir at either end of this dam.
13. *Kendur Tank*.—This tank is situated in the village of Kendur in Bádámi Táluka, and is formed by a bund thrown across a valley. It has one waste weir and one outlet. The area of the tank is 108 acres and 22½ gunthas.
14. *Hippargi Well*.—This well is situated in the village of Hippargi in Shindgi Táluka. This is a masonry step well and is in fair order, but the water is salt and unfit for irrigation purposes.
15. *Kumatgi Tank*.—This tank is situated in the village of Kumatgi in Bijápur Táluka. It is formed by an earthen dam thrown across a valley. There are two outlets in the dam in good order from which water is taken for irrigation purposes.
16. *Mamdápur Tanks*.—There are two tanks, one large and one small, situated near the village of Mamdápur in Bijápur Táluka. They are formed by indifferently built masonry dams thrown across two nálas running from north to south on the east and west sides of the village. The large tank has one waste weir and two sluices, and the smaller one has one waste weir and one sluice. The dams and sluices are in fair order.
17. *Inchigeri Tank*.—This tank is situated near the village of Inchigeri in Indi Táluka. It was completed in 1857 at a cost of Rs. 13,115. About 215 feet of earthen dam near the outlet was washed away in 1874 when the tank was full for the first time. Since then it has never been used for irrigation purposes nor repaired.

Of the above Nos. 15 and 16 were repaired during the year at an outlay of Rs. 141.

63. A complete statistical list of these works is now under revision and will be published when complete.

RATNÁGIRI DISTRICT.

64. There are four large irrigation tanks in this district similar to those described in the Belgaum and Dhárwar Collectorates. Annual repairs to two out of the four tanks were carried out, consisting of the removal of the sluice gates at the beginning of the monsoon, and tarring and fixing them at the close of it; also repairing earth dams, and pointing to masonry and pavement of the sluices. The two tanks thus repaired were those at Pat and Warad.

AGRICULTURAL WORKS.

65. The following is an abstract of the statement of consolidated revenue from drainage and protective works in the Broach District for 1891-92:—

Names of channels.	Expenditure during the year.	Total Expenditure up to date.	Amount realized from sale of occupancy rights.	Balance against Capital.	Area assessed under settlement.	Land taken up for cultivation.	Assessment of land taken up for cultivation.	Irrigation share.	Percentage of Revenue on Capital.
<i>Jambusar Táluka.</i>	Rs.	Rs.	Rs.	Rs.	Acres.	Acres.	Rs.	Rs.	
Kora-Madaphar Channel including Jantram Branch ...	329	14,356	1,594	12,762	2,750	1,278	4,652	Nil.	36.45
Amanpur-Nadiád Channel ...	3,125	14,302	2,059	12,243	980	740	3,056	Nil.	24.96
<i>Vágra Táluka.</i>									
Samadpur-Kadodra-Pun i a d r a Channel ...	...	7,072	3,800	3,272	495	477	1,006	Nil.	30.74
Total ...	3,454	35,730	7,453	28,277	4,225	2,495	8,714	Nil.	30.81
<i>Ankleshvar Táluka.</i>									
Piludra Channel (under construction) ...	1,021	1,021	...	...	...	...	...	...	...

66. The amounts realized from sale of occupancy rights during the year 1891-92 are as under :—

	Rs.
<i>Jambusar Taluka.</i>	
Kora-Madaphar Channel including Jantram Branch	515
Amanpur-Nadiad Channel	252
<i>Vagra Taluka.</i>	
Samadpur-Kadodra-Puniadra Channel	...
Total	767

67. It may be mentioned here that almost all the land rendered cultivable by the construction of the Samadpur-Kadodra-Puniadra channel has been taken up in previous years with the exception of 18 acres.

68. The Piludra Channel was under construction during the year and the land taken up for cultivation will be accounted for in the year 1892-93, as there was no realization during the current year.

69. The expenditure does not include establishment charges, but even with the addition of these the results would be very satisfactory. Omitting establishment charges the revenue amounts to 30·81 on the capital.

*Revenue Report of Irrigation Works in
the Bombay Presidency, excluding
Sind, for 1891-92—Review of the.*

No. 3 W. R.—20 of 1893.

Public Works Department.

Bombay Castle,
7th January 1893.

Letter from the Examiner of Public Works Accounts, No. B.-3—1860, dated 10th October 1892.

Forwards statements and tables required in connection with the Irrigation Revenue Report of works in the Deccan and Gujarát for 1891-92.

Letter from the Chief Engineer, Northern Division, No. 4586, dated 10th October 1892.

Forwards the Irrigation Revenue Report of works in the Northern Division for 1891-92, Parts I. and II.

Memorandum from the Superintending Engineer, Southern Division, No. D.—1336, dated 13th October 1892.

Forwards the Irrigation Revenue Report of works in the Southern Division for 1891-92, Part I. States that Part II. will follow.

Letter from the Superintending Engineer, Central Division, No. 4769, dated 14th October 1892.

Forwards the Irrigation Revenue Report of works in the Central Division for 1891-92, Parts I. and II.

Letter from the Superintending Engineer, Southern Division, No. D.—1403, dated 20th October 1892.

Forwards Part II. of the Revenue Report of Irrigation Works in his Division for 1891-92.

Letter from the Superintending Engineer, Central Division, No. 5107, dated 1st November 1892.

Forwards statement No. III. for the Revenue Report of Irrigation Works for 1891-92. Also supplies figures for insertion in the general remarks.

RESOLUTION.—The report is as usual divided into two parts :—the first deals only with works for which Capital and Revenue Accounts are kept, including new works and restorations or extensions and improvements ; and the second refers to all old works, such as tanks and bándhárás or weirs, &c., scattered throughout the country, and which are maintained and kept in working order by the Public Works Department.

2. As in the past year, Part I. includes 39 works, of which three,—the Chankápur and Maladevi Tanks and the Gokák Canal, 2nd section,—are still held in abeyance, and most of the remaining 36 are completed or nearly so. As no new projects were undertaken, the Capital expenditure on all works was only Rs. 1,97,505 distributed as follows :—

	Rs.
Debitable to { Major Works.....	1,37,757
Imperial Funds. { Minor Works.....	25,174
Provincial Works	34,574
Grand Total...Rs.	1,97,505

Of the Major Works, the expenditure was principally on the Níra Canal works, which absorbed Rs. 1,25,311, the greater part of which was expended on the storage work at Bhátghar, the capacity of which has been increased to 3,500 millions cubic feet. The irrigable area under command of this canal was increased, during the year, from 135,727 to 159,876 acres,

3. The entire capital outlay on all works, brought up to the end of the year, stood at Rs. 2,51,12,841, of which Rs. 1,78,22,884 have been expended on Major Works. The interest charges on Productive and Protective works to the end of the year amount to Rs. 1,00,96,621, and, deducting the net revenue realized, or Rs. 12,57,794, the deficit at the end of 1891-92 amounts to Rs. 88,88,827.

4. The gross revenue realized from all sources during the year was Rs. 5,12,072, as compared with Rs. 4,60,813 in the previous year, and the net revenue amounted to Rs. 2,26,179, as compared with Rs. 2,21,198 in the previous year; thus there was an increase of Rs. 51,259 in the gross, and Rs. 4,981 in the net, revenue. The growth of the gross revenue is satisfactory, and the relatively smaller increase in the net revenue is due to increased charges to the Revenue Accounts under—

(a)—Establishment charges due to the comparatively small expenditure on original works necessitating the establishment being charged in greater portion to the Revenue Accounts or Working Expenses.

(b)—Owing to special charges on account of extraordinary repairs, *viz.*, Rs. 12,279 adjusted against the Revenue Account of the Maini Tank; also special repairs to the Níra and Jámáda Canals.

Notwithstanding these special charges, the percentage of working expenses on the gross assessed revenue was 49·5, against 54 in the previous year, and the rate per acre irrigated was Rs. 2·97 against Rs. 3·20 in the previous year.

5. The net irrigable area under command was increased from 535,762 to 559,911 acres, showing an increase of 24,149 acres.

6. It is satisfactory to notice the considerable increase in the total area irrigated, which amounted to 21,173 acres, the total area being 96,025 against 74,852 acres in the previous year, and it is still more satisfactory to notice—*vide* the analysis given in para. 8 of the general remarks—that this increase is practically steady and progressive.

7. The principal crops irrigated were jowár (29,095 acres); ground-nut (11,973 acres); wheat (10,264 acres); sugar-cane (9,694 acres); bájri (8,415 acres); and gram, &c., (7,171 acres). As compared with the previous year there has been an increase under all these crops, except wheat and bájri. The estimated value of all the crops irrigated is Rs. 54,44,456, as compared with Rs. 39,97,695 in the previous year.

8. The assessed revenue amounted to Rs. 5,76,586, against Rs. 4,44,281 in the previous year; this large increase of nearly 30 per cent. was chiefly in water-rates for irrigation, though there was also a considerable increase in the revenue due from water-supply to towns, principally at Poona. The increase under irrigation, Rs. 1,09,897, is very satisfactory, as it is wholly due to increase in area of the higher classes of crops as well as to increase in the total area irrigated; the former being further indicated by the average water-rate per acre which was Rs. 4·33, as compared with Rs. 4·09 in the previous year.

9. The outstandings amount to Rs. 54,427, against Rs. 34,330 in the previous year, which is high, and the attention of the officers concerned is directed to the necessity of realizing the revenue due in proper time. The amount unrealized from the Krishna Canal, Rs. 19,418, is very high, and the causes should have been explained; the explanation of the officers responsible will be awaited. That on the Mutha Canals, Rs. 23,825 includes Rs. 18,229 on account of town water-supply, Rs. 16,894 of which are assessments for March, which, of course, could not be recovered within the year.

10. The working expenses for the year amounted to Rs. 2,85,893, against Rs. 2,39,615 in the previous year. The causes have been referred to in para. 4 *ante*, and have been fully analysed in para. 13 of the general remarks, Part I. of the Report, and it is now only necessary to state that Chief and Superintending Engineers are enjoined to exercise still more careful and strict scrutiny

on all expenditure which tends to increase the working expenses, as it is most desirable to reduce these to the lowest possible amount consistent with efficiency. In this regard it is noticed that the cost of the measurement of crops varies considerably on different works, and is decidedly high on some, notably on the Mhasvad, Ekrúk and Bhátodi Tanks, Ojhar Canal and Yerla River works, and the attention of the Executive Engineers concerned should be directed to this point with a view to reduction of such charges.

11. The net revenue of the year was—(1) on basis of assessment, Rs. 2,90,693, (2) on basis of realizations, Rs. 2,26,179, as compared with Rs. 2,04,666 and Rs. 2,21,198, respectively, in the previous year.

12. The gross receipts from Protective works were larger than in the previous year; yet there was a falling off in the net revenue, Rs. 8,168 against Rs. 12,304, owing to the heavier charges already referred to on account of working expenses.

13. The Productive works show a profit of Rs. 2,03,443, as compared with Rs. 1,73,955 in the previous year, and it will be noticed that the Mutha and Krishna Canals paid a net revenue of 2·57 and 2·45 per cent., respectively, on the capital outlay to the end of the year. The book credit taken in the Revenue Accounts of the Mutha Canals under sanction of the Government of India accorded in 1876 and 1884 for a sum of Rs. 20,434 on account of savings to the Military and other Departments on the cost of water supplied will be discontinued with effect from the 1st April 1893, under recent orders from the Government of India, and it will follow from this decision that the cost of maintenance of the tanks and wells in the cantonment should no longer form a charge against the Mutha Canals' accounts. The outlay on the maintenance of these works in 1891-92 amounted to Rs. 2,229.

14. An estimate has recently been sanctioned for improving the Ekrúk Canals, the state of which was referred to in the orders on last year's report, but it is feared that but little work can be done in the current year owing to scarcity of labor during the harvest season.

15. The net profit on all the Minor Works taken together amounted to Rs. 3,054, as compared with Rs. 28,955 in the previous year; this result is due to the heavy special repairs debited to the Jámda Canals and Maini Tank, as the gross receipts were only Rs. 287 less than in the previous year.

16. The Jámda Canals have now been in operation for about 25 years, but the supply in the river Girna is so uncertain that favorable results cannot possibly be expected until a storage tank is provided. The Chankápur Tank was designed for this purpose, and the works were commenced, but though the Government of India were satisfied that this would prove a valuable protective work, they have unfortunately not been able to allot funds for the continuance of the works, and have enquired whether this Government are prepared to accept Provincial responsibility for the same; the question is under consideration.

17. The Muchkundi Tank made a decided advance in this year, and for the first time paid its working expenses. A careful enquiry has been made into the case of this, as well as the Koregaon Tank, with the result that all the officers consulted—Revenue and Public Works—are of opinion that these works should continue to be maintained by the Public Works Department, in which opinion this Government concur. The prospects of both works are improving, and they are of decided benefit to the arid parts of the districts in which they are situated.

18. The Superintending Engineer, Central Division, has added a new statement marked H, showing the operations of the year: it is in fact a summary of valuable information spread over several statements, and might with advantage be added to future reports.

19. Part II. contains a much fuller account than has hitherto been given of the old works, tanks and weirs or bándhárás in the several districts, the reports for the Násik and Dhárwár Districts being specially interesting; it is hoped that those for 1892-93 may contain fuller accounts of these interesting works in other districts, and the Chief Engineer, Northern Division, is requested to instruct Executive Engineers specially on this point.

20. The total area irrigated under these old works was 145,597 acres, being 34 in excess of the previous year, and the net revenue, after deducting all expenditure on maintenance, repairs and improvements, amounted to Rs. 3,58,319, or Rs. 27,206 in excess of that of the previous year.

21. The drainage works in the Broach District continue to show good results, the return on the capital expenditure being over 30 per cent., and indicates the importance of well-considered schemes of this class.

22. When the year under report closed, the question of increased effort to systematically maintain and improve the efficiency of tanks in the Southern Marátha Country and Gujarát was under the consideration of Government. Orders have since been issued on the subject, and it is hoped that they will conduce to make the works more efficient. It has been decided to abandon the practice, which until lately prevailed, of requiring cultivators to contribute a portion of the cost of repairing those irrigation tanks as a condition precedent to the execution of such repairs, and it has been decided that all irrigation tanks, large and small, must be treated on the same principles, as the rights of cultivators under all the Government tanks, irrespective of their size, are identical. Funds for their repair and up-keep will be provided from the Public Works grants to the extent available, but it has been laid down that it would be justifiable to give the preference in order of execution to those cases in which the people concerned are willing to bind themselves by agreement to effect annually petty repairs, and further to help themselves by a contribution in money or labor, or both, the limit of such contribution being fixed at 10 per cent. of the estimated cost of the works required for putting the tanks into an efficient state. Provision has been made against a too rigid application of the rules laid down by allowing the Collector and Chief or Superintending Engineer joint discretion to relax them.

23. With regard to the remark in Part II., para. 56, clause c, relating to the provision to be made for the discharge of heavy floods, the attention of the Executive and Superintending Engineers is requested to Government Resolution No. 116 W. L.—1408, dated 25th August 1891.

24. Copies of the report and of this Resolution should as usual be forwarded to the Government of India and the Secretary of State.

C. T. BURKE,

Under Secretary to Government.

To

The Financial Department, Secretariat.
 The Revenue Department, Secretariat.
 The Commissioner N. D.
 The Commissioner C. D.
 The Commissioner S. D.
 The Survey and Settlement Commissioner.
 The Director of Land Records and Agriculture.
 The Chief Engineer N. D.
 The Superintending Engineer C. D.
 The Superintending Engineer S. D.
 The Superintending Engineer in Sind.
 The Examiner of Public Works Accounts.
 The Government of India.
 The Secretary of State for India.
 The Editors' Table.

} With copies of report.

} By letter.

Exd. B. B. P.

No. of 1893.

Copy forwarded for information and guidance to

Engineer,

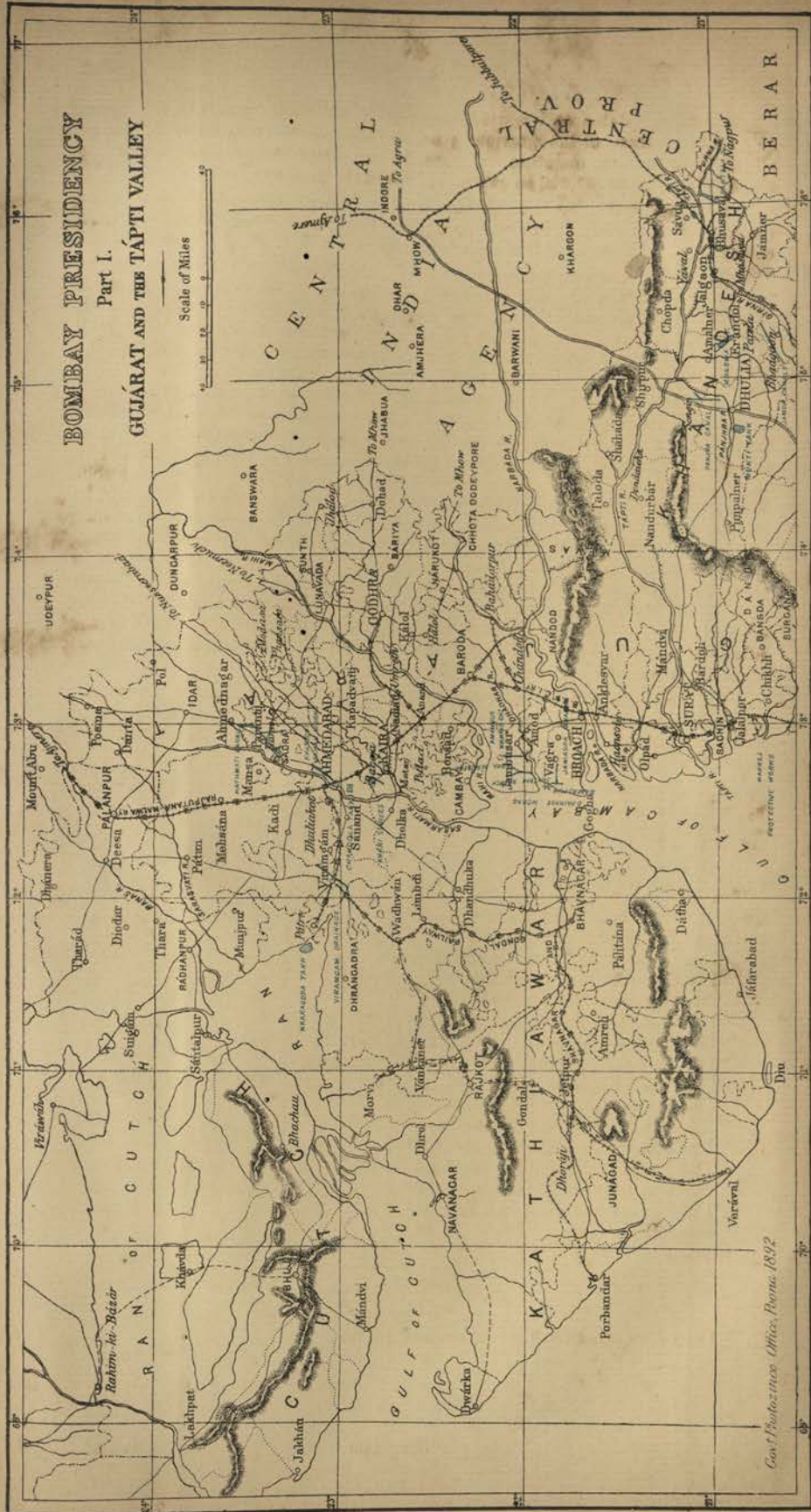
Division,

BOMBAY PRESIDENCY

Part I.

GUJARAT AND THE TÁPTI VALLEY

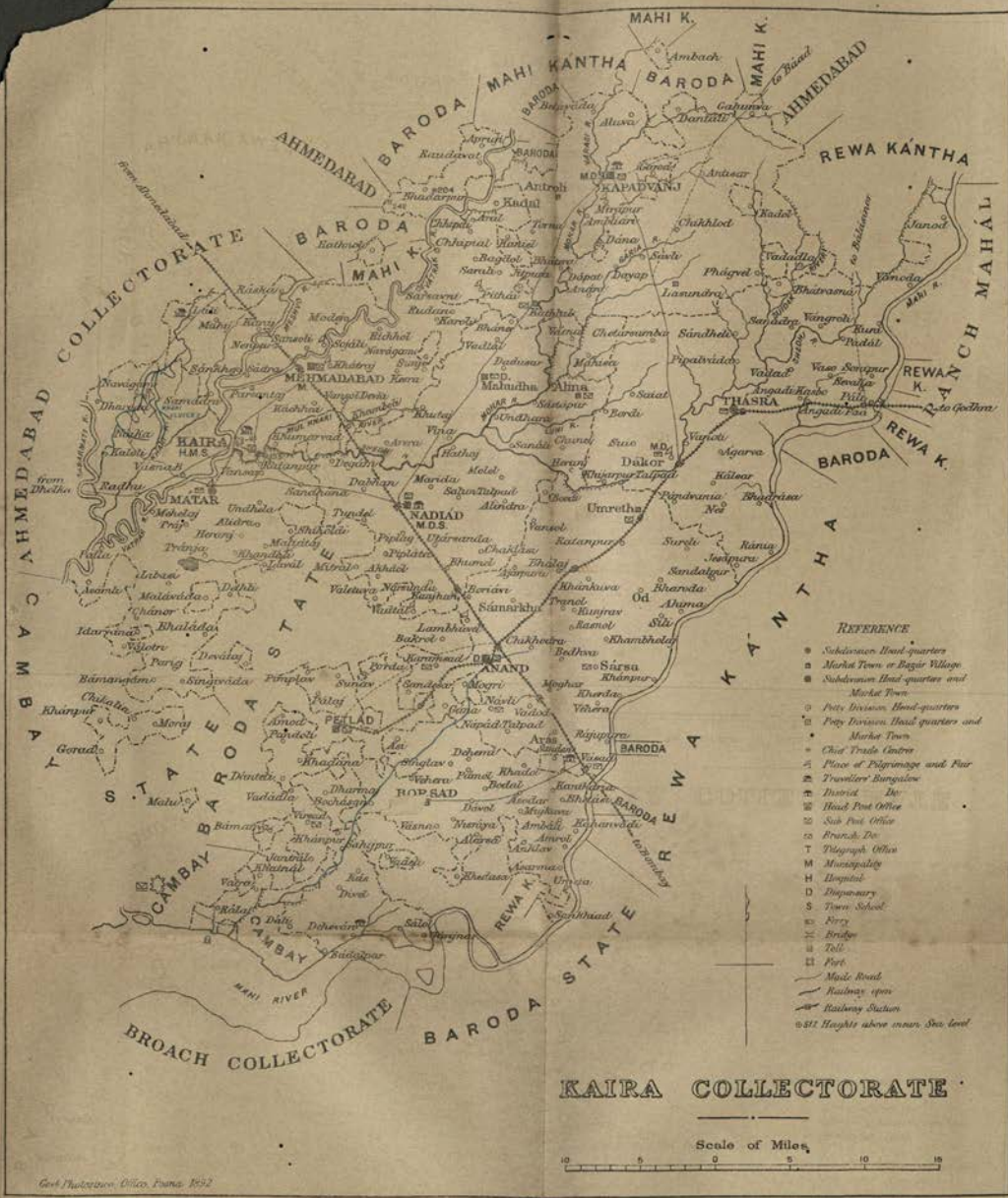
Scale of Miles
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Cost Printing Office, Poona, 1892

UNIVERSITY OF CALICUT
* YADRA 90. 1894
UNIVERSITY OF CALICUT





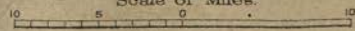


REFERENCE

- Subdivision Head quarters
- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- △ Chief Trade Centre
- △ Place of Pilgrimage and Fair
- Travellers Bungalow
- Inland
- Head Post Office
- Sub Post Office
- Branch Post Office
- Telegraph Office
- M. M. S. Office
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Toll
- Port
- Made Road
- Railways line
- Railway Station
- Light House
- Port
- 5/17 Heights above mean Sea level
- Drainage Channels

BROACH COLLECTORATE.

Scale of Miles.



KHANDESH
COLLECTORATE
EAST

Scale of Miles



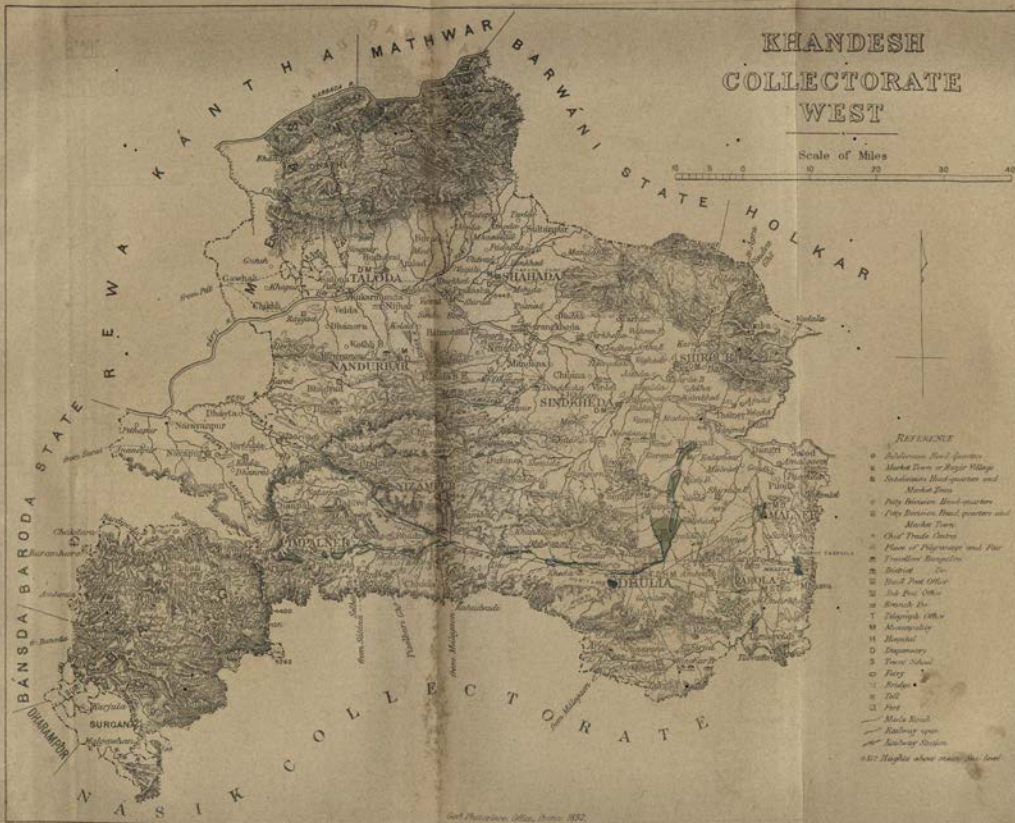
East Providence Office, Puerto Rico

0.517 Meters above mean Sea Level

KHANDESH COLLECTORATE WEST

Scale of Miles

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NASIK COLLECTORATE

Scale of Miles



REFERENCE

- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Pety Division Head-quarters
- Pety Division Head-quarters and Market Town
- Chief Trade Town
- Place of Pilgrimages and Fair
- Trunk-line Branching
- District En
- Head Post Office
- Sub Post Office
- Branch En
- Telegraph Office
- M. Telegraphy
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Toll
- Fort
- Made Road
- Railway open
- Railway Station

0.57 Higher than mean Sea level



REFERENCE

- Subdivision Head-quarter
- ▲ Market Town or Rajpi Village
- Subdivision Head-quarter and Market Town
- Panch Division Head-quarter
- Panch Division Head-quarter and Market Town
- Chief Trade Center
- ▲ Place of Pilgrimage and Fair
- ▲ Provisional Bungalow
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Pier
- Bridge
- Toll
- Fort
- Main Road
- Railway line
- Railway Station

• 977 Heights above mean Sea level

A detailed topographical map of the Ahmednagar District. The map shows the city of Ahmednagar at the top center, with the Deccan Plateau to its south. The map is labeled 'AHMEDNAGAR' at the top and 'COLLECTORATE' on the left side. It includes various towns, rivers, and mountain ranges.

Scale of Miles

REFERENCE

- 8 *Archives, Band quarters*
- 9 *Band Town - Judge Halsey*
- 10 *Archives, Band quarters and*
Market Town.
- 11 *Pony Express, Band quarters*
- 12 *Pony Express, Band quarters and*
Market Town.
- 13 *Chief Trade Center*
- 14 *Place of Pilgrimage and Site*
- 15 *Frontier Encampment*
- 16 *Barred In*
- 17 *Band Post Office*
- 18 *Old Post Office*
- 19 *Branch Office*
- 20 *Diagraph Office*
- 21 *Municipality*
- 22 *Hospital*
- 23 *Diagonizer*
- 24 *Town School*
- 25 *Pony*
- 26 *Bridge*
- 27 *Hill*
- 28 *Post*

•Set Heights above mean Sea Level

Scale of Miles



SATARA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head-quarter
- ▲ Major Town or Nagar Village
- Subdivision Head-quarter and Market Town
- Pany Division Head-quarter and Market Town
- ▲ Chief Trade Centre
- △ Place of Pilgrimage and Fair
- △ Government Bungalow
- ▲ District Office
- Head Post Office
- ▲ Sub Post Office
- Branch Post Office
- △ Telegraph Office
- M Municipality
- H Hospital
- D Dispensary
- S Town School
- V Village School
- Folly
- Bridge
- Well
- Fort
- Made Road
- Railway open
- Railway Station

857 fathoms above mean sea level

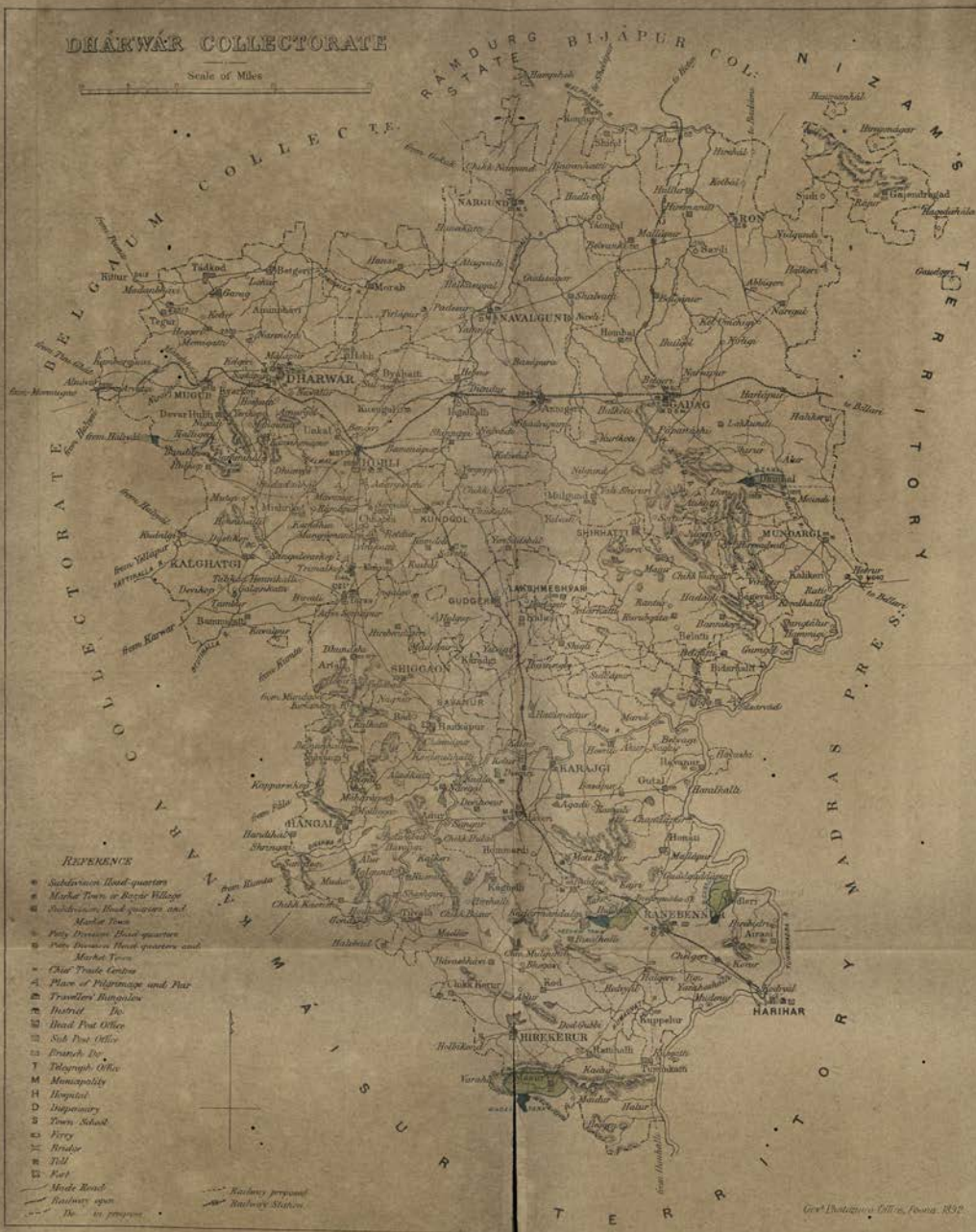


- 3 *Sagittaria flava* Greene
- 4 *Maclurea* v. *Reyer* Willm.
- 5 *Sagittaria flava* Greene and *Alston* Thun.
- 6 *Polygala* Greene
- 7 *Polygala* Greene
- 8 *Maclurea* Greene
- 9 *Chenopodium* Greene
- 10 *Chenopodium* Greene
- 11 *Thymus* Greene
- 12 *Thymus* Greene
- 13 *Thymus* Greene
- 14 *Thymus* Greene
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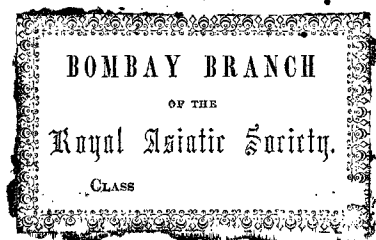
DHARWAR COLLECTORATE

Scale of Miles



IRRIGATION REVENUE REPORT
OF THE
BOMBAY PRESIDENCY,
EXCLUDING SIND,
1892-93.

PARTS I & II.



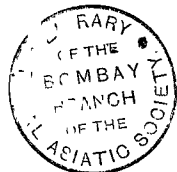
IRRIGATION REVENUE REPORT

BOMBAY PRESIDENCY,

EXCLUDING SINDH.

1892-93.

PARTS I & II.



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(EXCLUDING SIND).

1892-93.

PART I.

COMPRISING WORKS FOR WHICH CAPITAL AND
REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation. • The following list includes all the works in operation, 36 in number:—

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
		MAJOR WORKS.	
		<i>Protective Works.</i>	
Poona	1	Nira Canal	Storage lake at Bhátghar nearly completed. Will probably store full supply next year, the designed capacity being 5,500 millions cubic feet.
Sholápur	2	Mhasvad Tank	Completed, except a part of the waste weir which still requires raising.
		<i>Productive Works.</i>	
Ahmedabad	5	Háthmati Canal	Storage works under consideration.
Khándesh	6	Lower Pánjhra River Works.	Storage Tank at Mukti complete.
Násik	7	{ Kadva River Works. { Pálkhed Canal. Ojhar Tánbat Canal. Wadáli Canal.	{ Waghád Tank completed with the exception of the waste weir. {
Ahmednágár	8	Pravara River Works—Láksh Canal.	Máládevi Tank proposed for this work, but sanction withdrawn pending enquiry into modified proposals for the dam, and alternative proposals for a tank at Samrúd, revised survey of which is completed and the plans, &c., advanced.
Poona	9	Mutha Canals	Lake Fife at Khadakvásla complete.
Sholápur	10	Ekrúk Tank	Complete.
Sátára	11	Krishna Canal	Site for a storage reservoir is under consideration.
		MINOR WORKS AND NAVIGATION.	
Ahmedabad	12	Khari Cut	The Bokh project under consideration.
	13	Hartála Tank	Complete.
	14	Mhasva do.	Do.
Khándesh	15	Jámda Canals	Reservoir at Chankápur sanctioned and commenced, but work suspended for want of funds.
	16	Pársul Tank	Complete.
Ahmednágár	17	Pravara River Works—Ojhar Canal.	Vide remark against (8) Láksh Canal.
	18	Bhátodi Tank	Complete.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MINOR WORKS AND NAVIGATION—continued.			
Poona ...	19	Mátoba Tank.	Complete.
	20	Kásurdi do.	Do.
	21	Shirsuphal Tank	Do.
	22	Bhádalvádi do.	Do.
Sholápur ...	23	Koregaon do.	Do.
	24	Ashti do.	Do.
Sátára ...	25	Revári Canal	Storage Tank at Sonkeh proposed.
	26	Upper Mán River Works ...	Pingli Tank complete.
	27	Yerla River Irrigation Works	Nehr Tank complete.
	28	Chikhli Canal	No storage works yet proposed.
	29	Maini Tank	Complete.
Bijápur ...	30	Muchkundi Tank	Do.
	31	Nilgund do.	Do.
Belgaum ...	32	Gadikeri do.	Do.
Dhárwár ...	33	Dámbal do.	Do.
	34	Medleri do.	Do.
	35	Madag do.	Do.
	36	Asundi do.	Do.
	37	Mávinkop do.	Do.
<i>Provincial.</i>			
Belgaum ...	39	Gokák Canal, 1st Section ...	Storage works at Dhupdal completed.

Nos. 3 and 4, or Chankápur and Máladevi Tanks, are not included, as the works were not in operation; the former has been suspended and the latter has not yet been approved. No. 38—Gokák Canal, 2nd Section, is in abeyance.

2. The total capital outlay during and up to the end of the year was as follows :—

Main Heads.	To end of 1891-92.	During 1892-93.	To end of 1892-93.
<i>A.—Direct Charges.</i>	Rs.	Rs.	Rs.
I.—Works	1,91,40,343	1,46,514	1,92,86,857
II.—Establishment... ..	43,75,945	40,095	44,16,041
III.—Tools and Plant	4,99,124	1,183	5,00,307
IV.—Suspense ... ..	.....	.....	.....
Profit and Loss ... ..	.....	.....	.....
Total A ...	2,40,15,413	1,87,792	2,42,03,205
Deduct—Receipts on Capital Account.	35,033	28	35,061
Net Total, A.—Direct Charges ...	2,39,80,380	1,87,764	2,41,68,144
<i>B.—Indirect Charges.</i>			
Capitalization... ..	3,49,178	10,517	3,59,695
Loss by Exchange ... ..	.....	.....	.....
Leave and Pension Allowances ..	7,83,283	5,613	7,88,896
Total, B.—Indirect Charges ...	11,32,461	16,130	11,48,591
Grand Total A and B ...	2,51,12,841	2,03,894	2,53,16,735

3. The following abstract shows the details of the above :—

		Number of Works.	EXPENDITURE, 1892-93.			Total Expenditure, Direct and Indirect, to end of 1892-93.	Amount of Sanctioned Estimates.
			Direct.	Indirect.	Total.		
Major Works.							
Protective Works	In operation ...	2	1,04,255	3,370	1,07,625	72,70,013	82,32,709
	In abeyance ...	2	388	10	398	1,02,889	17,42,810
Total		4	1,04,643	3,380	1,08,023	73,72,902	99,75,519
Productive Works	In operation ...	7	53,046	8,626	61,672	1,06,19,678	1,08,45,341
Minor Works	In operation ...	26	24,823	4,083	28,906	60,92,073	63,82,174
	In abeyance ...	1	...	...	...	1,90,284	1,91,995
Total		27	24,823	4,083	28,906	62,82,357	65,74,169
Provincial Minor Works...	In operation	1	5,252	41	5,293	*10,41,798	11,41,213
Grand Total		39	1,87,764	16,130	2,03,894	2,53,18,785	2,85,36,242

* Including expenditure charged to "35. Construction of Protective Irrigation Works."

The number of works in operation is 36, the same as in the previous year. The Chankapur and Māldēvi Tanks and the Gokāk Canal 2nd Section are still in abeyance. A report on the subject of accepting Provincial responsibility for resuming work on the Chankapur Tank has been received and is under the consideration of Government. The question of storage works for the development of irrigation under the Lākh and Ojhar Canals is still under the consideration of the local officers and their report on the subject is awaited. The greater portion of the Capital outlay during the year was on the Nira and Mutha Canals. On the Nira Canal the work done during the year was chiefly on the two waste weirs of the Bhātghar dam. On the Mutha Canals the expenditure was in connection with several works, the principal of which were the construction of a high level reservoir and five new settling tanks. The irrigable area under command of the Nira Canal at the close of the previous year was 159,876 acres, and the first ten miles of the large distributary No. 59 had been opened. During the year under report another five miles of this distributary were brought into operation, bringing an additional area of 11,992 acres under command, raising the total irrigable area to 171,868 acres. The storage was increased to 4,000 millions cubic feet and is reported to have been largely in excess of the requirements of the year.

Interest Account.

4. The Interest Account to end of the year stands as follows:—

AMOUNT.						AMOUNT.								
			Protective Works.	Productive Works.	Total.				Protective Works.	Productive Works.	Total.			
			Rs.	Rs.	Rs.				Rs.	Rs.	Rs.			
Total Interest charges to end of 1891-92			24,21,155	76,75,468	1,00,96,621	Net Revenue realized to end of 1891-92			51,651	18,05,445	12,57,794			
Do. during 1892-93			2,54,014	4,04,357	6,58,371	Do. during 1892-93			38,077	1,91,115	2,19,192			
						—12,824						14,76,926		
						Balance net Interest charges to end of 1892-93						27,18,803	65,89,263	93,03,066
Total to end of 1892-93			27,05,169	80,79,823	1,07,84,992	Total			27,05,169	80,79,823	1,07,84,992			

5. The gross revenue realised from all sources during the year under review, after deducting refunds of revenue (Rs. 1,243), was Rs. 5,45,542, of which Rs. 5,32,795 were direct, and Rs. 12,747 indirect, receipts. The net revenue actually realised was Rs. 2,37,764.

The gross revenue shows an increase of Rs. 33,470, and the net revenue an increase of Rs. 11,585.

6. The gross area under command was 916,753 acres, being the same as in the previous year. The net irrigable area was 571,908 acres, as compared with 559,911 acres in the past year, showing an increase of 11,992 acres, the whole of which was on the Nira Canal.

7. The financial results of the year by main heads were as follows :—

	Areas Irrigated.	REVENUE REALIZED.			Working Expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
<i>Class I.—Works for which Capital and Revenue Accounts are kept.</i>	<i>Acres.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
Major Works ... { Protective Works.	23,243	1,11,877	...	1,11,877	73,860	38,017
... { Productive Works.	21,959	3,32,129	7,279	3,39,408	1,58,293	1,81,115
Total ...	45,202	4,44,006	7,279	4,51,285	2,32,153	2,19,132
Minor Works ...	*17,436	71,328	5,468	76,796	69,921	6,875
Provincial Minor Works ...	3,848	17,461	...	17,461	5,704	11,757
Total Class I ...	66,486	5,32,795	12,747	5,45,542	3,07,778	2,37,764

*Includes 999 acres on which consolidated assessment is levied.

The area shown as irrigated includes an area of 999 acres on which a consolidated land and water assessment is levied, and which is derived from works on which expenditure on improvements only has been incurred.

8. The figures showing areas irrigated, revenue assessed and realized, and working expenses, as compared with former years, are as follows :—

Years.	Area irrigated.	REVENUE.		Working Expenses.
		Assessment.	Realization.	
	<i>Acres.</i>	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
1882-83 ...	28,735	2,48,714	2,06,174	1,66,870
1883-84 ...	32,962	2,44,247	2,78,130	1,70,089
1884-85 ...	39,655	2,47,702	2,60,680	1,92,612
1885-86 ...	59,450	2,83,232	2,79,877	2,10,686
1886-87 ...	42,628	3,03,475	3,34,468	2,39,417
1887-88 ...	46,187	3,49,512	3,43,445	2,41,385
1888-89 ...	79,195	4,14,153	3,71,545	2,34,312
1889-90 ...	85,550	4,49,838	4,22,859	2,47,126
1890-91 ...	74,852	4,44,281	4,60,813	2,39,615
1891-92 ...	96,025	5,76,586	5,12,072	2,85,893
1892-93 ...	65,487	4,79,042	5,45,542	3,07,778

There was a considerable decrease in the total area irrigated as compared with the previous four years.

The decrease in the area irrigated, 30,533, was distributed over the several classes of works as follows :—

	Acres.
Protective works	13,924
Productive „	9,411
Minor „	5,051
Do. Provincial	2,152
Total	30,538

The decrease under Protective Works is considerable, and is made up of a decrease of 10,617 acres on the Nira Canal and 3,307 acres on the Mhasvād Tank. Under Productive Works the decrease is chiefly on the Mutha (7,264 acres) and Krishna (1,578 acres) Canals. That under Minor Works is made up of decreases under almost all the individual works, the only noticeable increase being on the Jámda Canals (1,398 acres).

The decrease is generally due to copious and seasonable rainfall. The increase in the case of the Jámda Canals is made up of 658 acres kharif and 740 acres rabi. The increase in kharif is said to be due to the watering of 642 acres of monsoon dry crops rendered necessary by the rain holding off in the early part of the monsoon. The late heavy rain in the kharif season, however, damaged some of the dry crops. They had, therefore, to be rooted out, and the rabi crops which took their place were watered from the canals.

In reviewing the report for the previous year the Government of India remarked that the increase in the irrigated area during that year was much smaller than might have been expected, and that viewing the large expenditure incurred on the construction and up-keep of irrigation works, the results obtained could not be regarded as satisfactory. They further called for an explanation of the reasons why greater progress has not been achieved in extending the irrigated areas below new works of irrigation in the Deccan, as to the efficiency of the several works in furnishing a water-supply for cultivation in seasons of deficient rainfall, and whether they are worked with careful regard to their effective utilization for that service. The matter is receiving attention and the Government of India will be addressed when all the reports of the local officers have been received.

9. The following table contrasts the distribution of rainfall in each month for the last five years:—

	I.—Works having an unfailing Supply.					II.—Works dependent on local Rainfall.				
	1888-89.	1889-90.	1890-91.	1891-92.	1892-93.	1888-89.	1889-90.	1890-91.	1891-92.	1892-93.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
<i>Kharif.</i>										
June	3.74	2.49	5.54	2.57	5.63	4.03	2.04	4.29	2.58	8.04
July	5.19	4.21	3.33	7.11	6.36	2.76	6.24	2.79	3.83	3.91
August	2.62	1.47	3.08	3.03	9.51	2.20	2.31	3.73	3.15	6.56
September	6.09	9.52	5.00	2.93	9.13	5.42	10.27	4.80	2.78	7.37
Total	17.64	17.69	16.94	15.64	27.83	14.41	20.86	16.61	12.39	26.38
<i>Rabi.</i>										
October	2.49	6.70	3.09	3.25	5.14	1.93	7.03	2.45	3.81	8.77
November	1.55	0.06	2.70	0.26	0.34	3.00	0.12	3.10	0.13	0.68
December	...	...	1.17	...	0.02	0.06	...	1.94	...	...
January	...	...	...	...	...	0.01	...	0.01	...	...
Total	4.04	6.76	6.96	3.51	5.50	5.00	7.15	7.50	4.04	9.40
Total Kharif and Rabi.	21.68	24.45	23.90	19.15	33.33	19.41	28.01	23.11	16.43	35.78

The rainfall in the year under report was considerably heavier than that of the previous year in the case of all works. In the case of many it was more than double.

The average in the two seasons, taking all the works together, was 33.66 inches as compared with 17.59 inches in 1891-92.

10. The total area irrigated was distributed as follows:—

Distribution of area.

		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
1891-92	...	43,905	52,120	96,025
1892-93	...	36,912	28,575	65,487

There is a decrease under both kharif and rabi, but that under rabi is very considerable. The differences in areas as compared with those of the previous year have been explained in the review of the annual statement of irrigation and rainfall.

11. The area irrigated was in excess of the area applied for, the figures being 60,394 and 65,487 acres respectively. The difference, as remarked in previous year, is chiefly due to the fact that the cultivators generally apply for less than they actually irrigate, probably from ignorance of what the areas of their holdings are.

12. The state of the collections was as follows :—

		Rs.	
Balance of demands unrealized at the commencement of the year.		54,427	
Demand of the year—			
Rabi, 1891-92	...	Rs. 1,23,496	
Kharif, 1892-93	...	" 2,43,038	
Miscellaneous receipts	...	" 1,45,375	
			5,11,909
		Total	5,66,336
Remissions	...		842
		Net Total	5,65,494
Amount unrealized at the close of the year	...		31,456
Actual receipts of the year	...		5,34,038
Add—			
Share of land revenue	...		12,747
			5,46,785
Deduct—			
Refunds of revenue	...		1,243
Revenue realized as per paragraphs 5, 7 and 8	...		5,45,542

The remissions and refunds together amount to Rs. 2,085. There is a considerable decrease in the total amount, Rs. 31,456, unrealised at the close of the year; this total is made up of the following :—

		Rs.	
Mutha Canals	...	15,708	
Gokak Canal	...	4,963	
Mhasvad Tank	...	2,635	
Khari Cut	...	2,205	
Kadva River Works	...	1,088	
Ekruk Tank	...	1,012	
Other works	...	3,845	
		Total	31,456

The outstanding balances on many of the works in the Central Division have since been mostly realised. Nearly two-thirds of the outstanding on the Mutha Canals were on account of town water-supply. In the Central Division the outstandings are represented to be due to late receipt of demand statements, and it is stated that the necessity of their punctual submission has been impressed on all concerned. The causes of the outstanding balances on the Gokak Canal have not been explained.

13. The total working expenses for the year amounted to Rs. 3,07,778 against Rs. 2,85,893 in the previous year, showing an increase of Rs. 21,885 distributed as follows :—

				1891-92.	1892-93.	Increase.
				Rs.	Rs.	Rs.
Major Works—						
Protective Works	...	...	...	55,538	73,860	18,322
Productive Works	...	...	...	1,39,998	1,58,293	18,295
		Total	...	1,95,536	2,32,153	36,617
Minor Works and Navigation						
Provincial Minor Works	...	...	...	84,984	69,921	—15,063
			...	5,373	5,704	331
		Grand Total	...	2,85,893	3,07,778	21,885

The Major Works show an increase of Rs. 36,617, divided almost equally between Protective and Productive Works. The working expenses under Minor Works show a decrease of Rs. 15,063, but this dwindles to Rs. 2,784 when the unusual charge of Rs. 12,279 adjusted against the Revenue Account of the Maini Tank for special repairs on account of damages done by heavy floods of 1889 is left out of consideration. The increase under Major Works is made up principally of increases on the Nira Canal, Mhasvad Tank, Mutha Canals, Ekruk Tank and the Krishna Canal.

The working expenses on the Nira Canal include a sum of Rs. 9,828 expended on special repairs which consisted of strengthening the banks by puddled earth cores where they were found to be unsafe or leaky, due to the nature of the soil of which they were made. It is explained that this is not an annually recurring charge, but will probably be incurred for the next two years. The total working expenses, including direction and indirect charges, amounted to Rs. 58,739. With 96 miles of main canal in operation this gives a rate of Rs. 612 per mile and Rs. 3.22 per acre irrigated against Rs. 447 and Rs. 1.49 of the previous year. The expenditure per acre irrigated was necessarily high, due to the small area watered in the rabi season. The working expenses include the maintenance of 124 miles of distributaries.

The working expenses on the Mutha Canals are made up of charges on account of maintenance of irrigation and maintenance, &c., of the water-supply. In the latter case the excess is attributable solely to the necessity of resorting to pumping by steam for a much longer period than usual, owing to the limited supply of water in Lake Fife. The cost of steam pumping this year was Rs. 5,488 as compared with Rs. 2,499 in the previous year. It is expected that the charge on this account will be very considerably reduced in future, owing to the erection of new steam pumps which are said to be in good working order. As regards the excess under irrigation it was due to heavy silt and weed clearance and extensive repairs found necessary to pitching banks. A re-arrangement of the existing maintenance establishment is reported to be under consideration, and it is anticipated that some reduction in this item of working expenses will be possible in the next year.

The increase on the Ekruk Tank is particularly due to the improvement work under construction. The question of improving the efficiency of works in connection with this project is now receiving consideration. The Superintending Engineer, Central Division, has been asked to submit an estimate for a thorough survey of the left bank perennial canal with a view to the preparation of a project for re-alignment, where necessary.

The increase on the Krishna Canal was due to the somewhat heavy outlay of Rs. 4,605 for special repairs on account of damages caused by heavy floods.

Under Minor Works the only work that deserves notice is the Ashti Tank, which shows an increase of Rs. 2,195, which is mainly under establishment charges.

The Superintending Engineer, Central Division, has under the orders passed in para. 4 of Government Resolution No. 35-W.-I.—533, dated 28th March 1893, impressed upon the Executive officers the necessity and importance of strict economy in working expenses, and he thinks that the report for 1892-93 should exhibit better results.

The percentage of working expenses on gross assessed revenue was 64·2 against 49·5 in the previous year, and the rate per acre was 4·69 against 2·97 in the previous year.

14. The following table contrasts the charges under the principal heads with those of the two previous years :—

				1890-91.	1891-92.	1892-93.
				Rs.	Rs.	Rs.
Works	...	...	...	...	11,951	6,070
Repairs	...	...	...	1,27,002	1,27,598	1,39,710
Establishment	...	...	...	79,329	98,285	1,19,234
Tools and Plant	...	...	...	3,971	3,956	3,913
Total in the Public Works Department				2,10,302	2,51,790	2,68,927
Collection charges...	...	...	...	18,206	20,242	22,026
Indirect charges	...	...	...	11,107	13,861	16,825
Total				2,39,615	2,85,893	3,07,778

The above shows a considerable increase under Establishment charges. These charges, divided between 'Direction and Accounts' and 'Executive,' compare as follows with those for the previous year :—

		1891-92.	1892-93.	Difference.
		Rs.	Rs.	Rs.
Direction and Accounts	...	4,462	27,939	+ 23,477
Executive	...	93,823	91,295	— 2,528
Total		98,285	1,19,234	20,949

The increase under Direction and Accounts is due to the alteration of mode of distribution sanctioned in Government Resolution No. 139 A.-I.—1077, dated 13th July 1893.

15. The following table gives the details of the working expenses of some of the principal works :—

Names of Works.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.		WORKING EXPENSES TOTAL IN THE PUBLIC WORKS DEPARTMENT.	
		Total Cost.	Per Acre.	Per mile of Main Canal.	Per Acre Irrigated.
<i>Canals.</i>		Rs.	Rs. a. p.	Rs.	Rs.
Nira Canal	3-29	2,102	0 1 10	539	2-84
Háthmati Canal	2-13	122	0 0 9	247	1-90
Kadva River Works	3-40	206	0 1 2	304	2-58
Pravara River Works - Lákhi Canal.	3-37	31	0 3 1	118	17-26
Mutha Canals	14-19	1,050	0 2 6	893	11-56
Krishna Canal	9-63	896	0 3 9	328	3-05
Jámda Canals	1-84	77	0 1 4	294	5-04
Pravara River Works—Ojhar Canal.	3-16	154	0 3 0	274	4-72
Yerla River Works	3-48	466	0 4 1	202	3-19
Upper Mán River Works ..	2-90	303	0 4 8	217	3-67
<i>Tanks.</i>					
Mbasvad Tank	4-00	1,392	0 4 6	215	2-58
Ekruk Tank	4-86	503	0 2 7	511	8-07
Bhatodi Tank	3-02	17	0 2 2	842	2-83
Mátoba Tank	7-06	67	0 1 3	120	2-30
Shirsuphal Tank	3-91	58	0 1 2	340	5-41
Bhádaivádi Tank	4-91	42	0 1 0	150	4-41
Maini Tank	4-46	419	0 6 1	277	2-33

Compared with last year the cost of measurement was very high in the case of the Maini Tank, Upper Mán River Works, Mhasvad Tank, Yerla River Works, and the Krishna and the Láksh Canals. On the Láksh Canal the high rate is said to be due to the area of the fields irrigated being small and scattered along the canal. As regards Mhasvad Tank, the increase has not been explained, but it is stated that some changes in the system of measurement and its supervision are being introduced by which it is hoped that the expenditure will be reduced. As regards the works in the Sátára District, the heavy cost is said to be due to the fact that in the year 1892-93 some of the establishment in that district previously charged to works has been charged to Revenue Establishment; besides the assistance of the Mahárs which used to be obtained without any payment was discontinued. The increase is also partly due to the falling off in the area irrigated.

16. The indirect receipts as shown in Statements I-C, IV-C and II-E were Rs. 12,747. If Rs. 19,622 on account of savings to the Military and other Government Departments i.e., the difference between the amount formerly charged to them for water-supply and the amount paid during the year under report to the Irrigation Department, be added to this, the indirect receipts amount to Rs. 32,369 and the total assessments of the year to Rs. 4,98,664 as compared with Rs. 5,97,070 in the previous year. Also if Rs. 5,428 plus Rs. 41,328 on account of supply to the Poona City—Rs. 46,756, being the difference between the value of water issued from the Mutha Canals at normal rates, and the value of water supplied at special reduced rates or gratuitously be taken credit for in the revenue returns of the work as a book credit and be added to the above amount, the earnings will be Rs. 5,45,420.

A statement showing the details of the sum of Rs. 19,622 above referred to is attached to the report on the Mutha Canals as desired by the Government of India.

The Government of India have now rescinded their orders of 1876 and 1884 with regard to the entry of the above item in the Administrative Accounts of the work as a foot-note. These orders are to have effect from 1st April 1893, and it will be unnecessary to attach a similar statement to the report for the year 1893-94. The outlay for maintenance of tanks and wells in the Poona Cantonment during 1892-93 was Rs. 1,489. The question of transfer of tanks and wells to the Military Department is under consideration.

The subject of the charge made to the City Municipality of Poona for water has been considered by this Government, and the Government of India were addressed in this Government letter No. 76 W.I.—791, dated 17th May 1892. The Government of India have asked for further information on certain points and the matter is under consideration.

17. The net assessed revenue of the year, after deducting working expenses, including indirect and all other charges, and neglecting the items, amounting to Rs. 66,378, referred to in the preceding paragraph, was Rs. 1,71,264, as compared with Rs. 2,90,692 in 1891-92.

The details of the assessment were as follows :—

	DIRECT REVENUE.			Indirect Revenue.	Total.
	Water Rates.	Other Receipts.	Total.		
<i>Major Works.</i>	Rs.	Rs.	Rs.	Rs.	Rs.
Protective Works	80,033	2,376	82,409	...	82,409
Productive Works	1,72,636	1,26,779	2,99,475	7,279	3,06,754
Total	2,52,729	1,29,155	3,81,884	7,279	3,89,163
Minor Works... ..	58,634	6,237	65,071	5,468	70,539
Provincial Minor Works	9,857	9,983	19,840	...	19,840
Grand Total	3,20,920	1,45,375	4,66,295	12,747	4,79,042

Water-rates. 18. The water-rates in force during the year are shown in Statement I-F. and were the same as in the previous year.

19. The average water-rates per acre of land actually irrigated were :—

	1891-92.	1892-93.
Protective Works	2.47	3.44
Productive Works	7.41	7.86
Minor Works	3.76	3.58
Provincial Minor Works	1.91	2.43
Average of all taken together	4.33	4.90

20. The water-rate assessments and other receipts compare with those of the previous year as under :—

	1891-92.	1892-93.
	Rs.	Rs.
Water-rates	4,16,592	3,20,920
Other Receipts—		
Plantations	17,761	3,707
Water-power	11,310	15,840
Water-supply to towns	1,04,420	1,00,670
Miscellaneous	13,856	25,158
	1,47,347	1,45,375
Share of land revenue	12,647	12,747
	1,59,994	1,58,122
	5,76,586	4,79,042

The above comparison shows a decrease under all heads except Water-power, Miscellaneous and Share of land revenue. The decrease under Water-rates may be attributed to the falling off in the irrigated area and that under Water-supply to towns to diminished supply of water to the Town and Cantonment of Poona during the year under report.

Under Plantations there is a decrease of Rs. 14,054 made up of decreases under several works. The most noticeable decrease is on the Ekruk Tank, the plantations on which are, owing to the proximity of Sholapur to the tank and canals, expected to form an important source of revenue. In the report of the Executive Engineer the revenue from plantations is given as Rs. 4,116 against Rs. 7,057 in the previous year and the falling off is explained as due to fewer sales of trees. In Statement IV-C, prepared by the Examiner of Public Works Accounts, the revenue from this source is given as Rs. 256. There would thus appear to be a divergence in the classification of "Other Receipts" adopted by the two officers. This should be enquired into.

Crop acreages. 21. The principal crop acreages irrigated during 1891-92 and 1892-93 were as follows :—

	1891-92.	1892-93.	Increase or Decrease.
	Acres.	Acres.	Acres.
Gardens and orchards	3,083	2,676	—407
Sugarcane	9,694	8,851	—843
Wheat	10,264	10,768	+ 504
Rice	5,003	2,860	—2,143
Maize	2,463	2,179	—289
Jowári	29,095	5,871	—23,224
Báiri	8,415	4,871	—3,544
Gram, &c.	7,171	5,683	—1,488
Ground-nut	11,973	11,242	—731
Condiments	3,190	2,344	—846
Fodder	1,089	3,956	+ 2,867

of these the chief crops were:—

	Acres.
Sugarcane	8,851
Wheat	1,068
Jowári	5,871
Báji	4,871
Gram, &c.	5,683
Ground-nut	11,242

The decrease under Jowári is very heavy. It occurred principally on the Nira Canal (11,832 acres), Mhasvad Tank (3,013 acres), Mutha Canals (3,069 acres), and the Gokák Canal (2,028 acres).

The total estimated value of crops irrigated is shown as Rs. 39,47,775 against Rs. 54,44,456 for the previous year.

22. In Statement I-E. the duty of water on each work, as well as the basis to which the duties were calculated, &c., are shown. The results vary very much on different works; but, as observed in previous years, this is to be expected, as the conditions also vary considerably, and in most of the canals it is necessary to maintain a much larger discharge than is necessary for the area under irrigation owing to the bulk of the land irrigated being frequently situated at the tail of the canal at a long distance from the head works.

Details of the duty obtained on each canal are given in the body of the report and are generally estimated from the daily discharge observations and the known area of the miscellaneous crops under irrigation during the period; the principal results are as follows:—

	Duty in Acres per Cubic Foot per Second.			
	Maximum.	In month of	Minimum.	In month of
Mutha Canals	73.53	April	43.83	March.
Matoba Tank	161.57	May	54.38	February.
Shirsúphal Tank	70	April	12.75	Do.
Bhádálvadi Tank	86.38	December.	39.83	Do.
		Khárf.		Rabi.
		Average Duty.		Average Duty.
Krishna Canal	31		28	
Revári Canal	25		99	
Upper Mán River Works	91		27	
Yerla River Works	40		34	
Chikhli Canal	75		11	
Maini Tank	308		69	

Special experiments to determine the duty of water per acre were carried out during the year with the following results:—

Lower Pánjhra River Works, Khándesh District, in the village of Nahalod—

	C. ft.
Wheat	25,511 per acre.
Peas	18,688 „

Jámda Canals—

Wheat (Bansi)	46,980 „
Gram	28,870 „

Some special observations were also made on the Nira Canal, the results of which are shown separately in a table in the report for that work.

The Acting Executive Engineer's remarks on the duty of water given in paragraphs noted in the margin are very interesting; and the Superintending Engineer states that with a view to the submission of a special report on this subject, the matter is being gone

into in correspondence with the Executive Engineer, Sholápur District, and that a report will be made as soon as possible.

23. Information regarding evaporation, absorption, &c., not having been given for any of the tanks in Sholápur, the Executive Engineer of the district was addressed by the Superintending Engineer on the subject and that officer

expressed his inability to comply with the request on the ground of there being insufficient details forthcoming on the records, owing to want of knowledge on the part of the subordinates in charge. He, however, says that he has called in all statements and details and intends thoroughly overhauling the matter and setting it right for succeeding years.

As regards paragraph 17 of the Mutha Canals report regarding similar information, the Executive Engineer reports that it was not possible to take the observations during the year under review without seriously interfering with the irrigation. The Superintending Engineer states that the question will be taken up after the rains, and will be reported on in the next hot weather.

PART II.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT, AND AGRICULTURAL WORKS.

24. The reports submitted this year contain a full account of the old works in the Ahmedabad, Surat and Broach, and Násik districts, and the steps taken to maintain, repair and improve them. The works though small and simple in character are useful to the people and profitable to Government.

25. The following shows a comparison of the figures for the year under report with those for 1891-92 :—

	1891-92.	1892-93.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Area irrigated	145,597	146,187	590	.....
	Rs.	Rs.	Rs.	Rs.
Revenue receipts	5,27,967	5,44,910	16,943	.....
Expenditure	1,69,648	1,97,976	28,328	.....
Net revenue	3,58,319	3,46,934	.....	11,385

The area irrigated shows an increase of 590 acres, and the receipts an increase of Rs. 16,943.

26. The following gives some details of expenditure :—

	EXPENDITURE.		COMPARISON.	
	1891-92.	1892-93.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Extensions and improvements	23,089	29,296	6,207	.....
Maintenance and repairs	28,886	34,094	5,208	.....
Establishment	64,123	79,133	15,010	.....
Tools and Plant	869	1,042	173	.....
Total	1,16,967	1,43,565	26,598	.....
Share of collection charges	52,681	54,411	1,730	.....
Total	1,69,648	1,97,976	28,328	.....

The increase under 'Establishment' is distributed over all the districts except Dhárwár, which shows a satisfactory reduction of Rs. 12,131. The increase is most noticeable in the Násik and Khándesh districts and has not been explained.

Statement of Canals in the Bombay Presidency, including Sind.

Source of Supply of Water.	(1) N'RA CANAL	(5) HATHMATI CANAL	(7) KADVA RIVER WORKS. PA'LEHED CANAL	(7) KADVA RIVER WORKS. OSBAR CANAL	(7) KADVA RIVER WORKS. WADALI CANAL	(8) LA'KH CANAL	(11) KRISHNA CANAL	(12) KHADI CUT.	(15) JAMIA CANALS	(17) OHAR CANAL	(25) RYALI CANAL	(28) CHURRI CANAL	(39) GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS.
River Nira and Reservoir at Bhatgar.	Hathmati River.	Kadva River.	Kadva River.	Bhongga River.	Kadva River.	Pravara River.	River Krishna and Banfall.	Khad River.	Girna River.	Pravara River.	River Werna and Rainfall.	River Nandi and Rainfall.	River Ghak- kha and Storage Works.
Minimum discharge } C. ft. per second. per second.	{ K. 1,318 R. 34 H.W. 5	{ K. 8 R. 106 H.W. 26	{ K. 14,48 R. 4,08 H.W. 0.13	{ K. 0.97 R. 0.42 H.W. 0.00	{ K. 5.58 R. 4.40 H.W. 0.87	{ K. 628 R. 50.82 H.W. 0.00	{ K. 66.94 R. 1,639.97 H.W. 319.07	{ K. ... R. ... H.W. ...	{ K. 100.95 R. 165.46 H.W. 7.92	{ K. 4.48 R. 59.40 H.W. 7.92	{ K. 5.22 R. 650.52 H.W. 21.51	{ K. 5.41 R. 265.87 H.W. 10.81	{ K. 47 R. 47 H.W. 56
Maximum discharge } of canal.	456	101	2201	5'00	972	36.15	71.57	180	April and } May 1893 } Late Right Bank H.W. 53.94 18.19	69.08	8.80	874	{ K. 34.37 R. 31
Average annual rainfall Inches.	29.38	{ K. 21.26 R. 0.87	29.67	20.19	20.19	24.12	25.68	{ K. 21.35 R. 0.81	{ 27.05 37.122	28.68	30.51	23.89	Dhup. dal. Gokak. 27.11 22.64
Gross area commanded Acres.	307,559	44,744	28,832	8,055	3,486	29,913	27,407	17,300	37,122	23,724	3,813	1,871	18,668
Culturable do. "	274,447	28,840	26,280	7,421	2,729	26,536	25,533	12,000	33,124	21,155	3,624	1,478	17,827
Area irrigable by complete project. "	227,670	11,336	23,466	6,324	2,433	22,760	25,533	11,800	33,124	20,068	3,624	1,478	16,663
Do. at present "	171,868	8,000	9,837	2,367	2,423	11,250	25,533	11,500	23,477	14,763	3,624	1,478	16,663
Sanctioned Estimate—													
Direct charges Rs.	57,34,655	5,89,705	2,35,087	14,541	29,771	3,75,189	8,29,097	1,66,857	10,37,238	3,25,902	56,324	53,803	10,80,284
Indirect charges Rs.	3,89,780	30,000	15,761	833	20,277	20,277	8,16,578	11,893	61,402	22,309	3,124	3,612	60,929
Interest during construction Rs.	28,44,872	2,37,687	2,12,564	2,411	32,150	3,65,298	4,85,218	...	...	...	...	...	1,44,865
Total, Estimate Rs.	89,49,307	8,57,392	4,66,409	17,785	63,461	7,60,764	16,39,891	1,78,680	10,88,640	3,48,211	59,448	57,445	12,86,078
Expenditure { Direct charges Rs.	50,80,604	4,90,925	2,19,348	6,644	27,955	3,52,523	8,13,063	1,67,010	9,88,081	3,09,628	56,422	53,803	10,15,322
do. and of Indirect charges Rs.	1,54,348	27,470	16,330	191	1,399	19,452	44,024	11,631	52,365	20,614	2,847	3,630	26,476
1892-93. { construction. Rs.	17,41,943	3,94,475	1,88,198	961	28,503	3,41,331	8,15,364	...	...	...	...	...	1,76,941
Total, Expenditure Rs.	69,76,895	9,12,871	4,41,876	7,796	57,867	7,13,021	16,73,356	1,78,641	10,40,446	3,30,242	59,369	57,442	12,18,739
Works as now sanctioned—													
Main Canals, Irrigation Miles.	100 1,219	21	11	8	8.62	23	354	16	39	19	58	64	28
Distributaries do. "	132 2,447	...	...	...	...	...	26.25	7	...	...	...	...	12
Of above—							...	6	...	...	...	...	26.55
Navigable channels	...	...	...	...	...	...	...	...	...	...	...	...	...
Works completed at end of 1892-93—							...	...	...	...	...	...	...
Main Canals, Irrigation Miles.	96	21	11	44	8.62	23	354	16	39	19	58	64	28
Branch Canals do. "	...	...	...	...	...	...	26.25	7	...	...	...	...	12
Distributaries "	...	...	...	...	...	...	...	6	...	...	...	...	26.55
Of above—							...	...	...	...	...	...	...
Navigable channels	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement of Reservoir Projects in the

	(1)	(2)	(3)	(7)	(9)	(10)	(13)	(14)	(16)	(18)	(18)	(20)
	Bhatghar Reservoir, Nira Canal.	Mhas- vad Tank.	Lower Panjhra River Works and Mukti Tank.	Kadva River Works (Waghad Tank).	Mutha Reservoir, Lake FHE.	Ekrak Tank.	Hartala Tank.	Mhasva Tank.	Parsul Tank.	Bhatodi Tank.	Mitoba Tank.	Kasurdi Tank.
Source of Supply.	Yelvandi River and Ghat Catch- ment.	Mán River and Rainfall.	Local Streams.	Kolvan River.	Mutha River and Rainfall.	Adhela River and Rainfall.	Local Streams	Local Streams.	Parent River.	Mehekri River.	Nále, Rainfall and sur- plus water from Mutha Right Bank Canal.	Kasurdi Nála and Rain- fall.
If supplied by rainfall, { Area of catchment, Sq. miles ... 123 480 34.2 29 196.00 158 6.80 13.40 17.38 44.0 10.00 6.00												
{ Average annual rainfall Inches ... 145 28.37 23.28 51.44 33.41 32.32 25.56 30.23 21.82 24.77 18.40 20.80												
Contents of tanks between levels of } Millions surface of full supply and sill of } 5,500 2,633 342.3 606 { (1) 2,679.85 (2) 3,283.20 (3) 2,629.78 (4) 3,289.24												
canal head sluice of cubic feet.												
Area of surface at full supply ... { Acres and decimals. } 3,584 401.80 608.00 778 { 94,087 17,152 584 4,647 2,568 15,126 10,700 507												
Gross area commanded Acres ... 120,045 13,117 (e) ... 49,800 16,941 527 4,075 2,888 18,657 7,133 478												
Culturable do. " ... 106,214 12,627 (e) ... 49,800 16,941 527 4,075 2,888 18,657 7,133 478												
Area irrigable by complete project " ... 106,214 12,627 (e) ... 49,800 16,941 527 4,075 2,888 18,657 7,133 478												
Do. at present " ... 106,214 12,627 (e) ... 49,800 16,941 527 4,075 2,888 18,657 7,133 478												
Wells supplied by tanks No. ... 13 21												
Sanctioned Estimate—												
Direct Charges Rs. (a) ... 30,24,327 4,44,486 4,67,662 62,14,206 12,28,243 48,880 1,39,813 2,10,502 3,51,767 1,93,000 40,812												
Indirect Charges " (a) ... 1,02,947 22,774 16,835 2,40,697 1,06,687 26,150 10,202 7,013 26,511 47,500 4,778												
Interest during construction " (a) ... 8,56,222 3,33,773 217,263 24,30,206 8,00,850												
Total Estimate Rs. (a) ... 37,84,496 8,51,033 7,01,780 88,85,109 21,35,580 75,040 1,40,015 2,17,513 3,78,278 2,10,500 45,590												
Expenditure to end of 1892-93—												
Direct Charges Rs. (a) ... 19,74,510 4,37,181 4,37,880 61,22,131 12,28,117 47,948 1,30,701 2,06,710 3,52,685 1,88,148 40,812												
Indirect Charges " (a) ... 60,551 22,768 11,690 2,28,608 1,12,288 25,434 10,229 6,870 27,022 12,579 4,778												
Interest during construction " (a) ... 8,10,416 3,38,773 1,61,967 46,44,100 11,36,141												
Total Expenditure Rs. (a) ... 28,45,477 8,43,722 6,11,537 1,06,94,938 24,06,527 73,382 1,40,930 2,13,580 3,79,707 2,00,727 45,590												
Works as now sanctioned—												
Dam (earth or masonry) Masonry ... Earth. Earth. Earth. Masonry. Earth. Earth. Earth. Earth. Masonry. Earth. Earth.												
Total Height Feet (b) 127 (c) 108 79.79 65 95 97.84 76 51 44 63 50 48.41 16.00												
Canals Mile ... 27 3,809 ... (f) ... 88 48 43												
Distributaries " ... 66 45 (f) ... 70 ... 5.5 7 ... 5 17 1.75												
Works completed at end of 1892-93—												
Dam (height) completed Feet (d) ... 79.79 65 93 97.84 76 51 44 63 50 48.41 16.00												
Canals MRes. ... 27 3,809 ... (f) ... 88 48 43												
Distributaries " ... (g) 66 45 (f) ... 67 ... 5.5 7 ... 5 17 1.75												

(1) 244.7 is the reduced level
(2) 243.7 is the height to which

A.

Bombay Presidency, excluding Sind.

(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	REMARKS.
Shirsu- phal Tank.	Bhādal- vādī Tank.	Koregaon Tank.	Ashti Tank.	Upper Main River Works (Pindl Tank).	Yerla River Irriga- tion Works (Nahr Tank).	Maini Tank.	Much- kundi Tank.	Gadi- keri Tank.	Dāmbal Tank.	Medleri Tank.	Madag Tank.	Asundi Tank.	Māvinkop Tank.	Gokak Canal, 1st Section, and Storage Works.				
Minor tributary of the Bhima River and Rain- fall.	Minor tributary of the Bhima River and Rain- fall.	Nals and Rainfall.	Ashti Nals and Rainfall.	Main River and Rain- fall.	Yerla River and Rain- fall.	Wanga Nals and Rain- fall.	Much- kundi Nals and Rain- fall.	Rain- fall.	Rain- fall.	Medleri Nals and Rain- fall.	Kumud- wadi River and Rainfall.	Rain- fall.	Rainfall.	Ghat- prabha River.				
23-00	33-00	4-4	02	20-00	59-5	54-00	26	68	43	11	540	23	6-25	1,090				
21-00	23-57	35-27	20-36	30-26	30-05	23-40	23-30	23-68	19-46	21-78	29-59	23-31	30-01	55-00				
365	222	81	1,419	195,246	498,777	188,599	680	27-5	113,664	67,800	54,630	105,500	43-75	701,297				
838-79	335-16	202	2,077	349-4	678-9	380-4	1,059	129	442	162	382	418	170-5	2,272-45				
4,500	3,000	Not known.	17,892	8,443	11,234	4,876	5,570	687	4,596	1,916	2,285	1,800	687	18,668	(e) Information supplied in Statement 2-A, the tank being only a feeder.			
3,500	2,400		10,825	7,623	16,630	4,625	5,417	Not known.	4,626	1,062	1,730	1,800	Not known.	17,627				
2,500	2,400		14,476	7,623	10,680	4,625	3,417	450	4,595	1,016	Project not completed.	1,800	665	10,663				
2,500	2,400		14,476	7,623	10,680	4,625	3,417	337	4,626	1,052	1,750	1,800	477	16,863				
...	...		...	25	18	13	Nil.	None.	Un- certain.	Nil.	Nil.	Nil.	Nil.	None.				
3,00,460	3,14,362	40,731	7,54,250	4,16,341	6,30,448	3,68,000	1,48,200	8,888	61,162	78,237	2,32,263	67,731	27,880	(a)....	(d) Figures given in State- ment 1-A.			
12,922	14,342	1,313	80,877	28,190	47,260	22,402	17,322	850	3,744	3,468	17,144	12,764	3,928	(a)....				
...	...	...	...	...	...	...	...	...	...	...	...	...	...	(a)....				
2,32,382	2,32,721	42,049	8,34,927	4,44,531	7,27,702	3,90,492	1,65,622	9,238	64,906	81,705	2,49,407	80,485	31,317	(a)....				
1,90,738	2,13,106	37,923	7,52,138	4,07,421	6,23,538	3,67,671	1,40,217	8,015	60,847	78,354	1,61,248	60,741	27,612	(a)....				
13,004	14,122	1,266	78,731	22,141	41,603	22,239	15,832	364	3,133	3,038	6,350	1,718	3,225	(a)....				
...	...	...	...	...	...	...	...	...	...	...	...	...	...	(a)....				
2,11,793	2,37,228	89,189	8,30,869	4,20,602	6,63,036	3,60,910	1,55,549	9,279	63,980	81,392	1,67,598	62,459	30,847	(a)....				
Earth.	Earth.	3 dams, 1 earth and the other masonry.	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.	Earth.	Earth.	Earth.	Earth.	Masonry weir.				
64-32	55-09	71 and 16	57-75	58-50	74	57-23	60	20	42-25	26-02	100	33-95	30-53	25' high, Ma- ximum above founda- tion 28' earthwork	(b) Above lowest founda- tion. (c) Above lowest point in river-bed. (d) The main dam com- pleted to full height; the weir brought up to crest level, and arched over. (e) The tank supplies the Falkhed, Ojhar Tāmbat and Wadeti canals as noted in Statement 1-A. (f) Includes 23½ miles of branch canals. (g) Includes 6 miles of branch canals.			
...	...	3½	21½	17½	28-48	9½	5½	Nil.	...	...	9	...	...	148				
12-5	9-75	...	8	6½	4-0	7-46	2½	Irriga- tor's Channel	2	5½	...	5½	Irrigator's Channel.	26-53				
54-33	55-00	71 and 16	57-75	58-50	74-0	57-33	60	20	42-25	25-02	100	33-95	30-53	23				
...	...	3½	21½	17½	28-48	9½	5½	Nil.	...	...	9	...	...	3½ miles and Waderhatti branch 12 miles.				
12-5	9-75	...	(f) 8	6½	4-0	7-46	2½	Irriga- tor's Channel	2	5½	...	5½	Irrigator's Channel.	26-53				

of the finished crest of weir.
water is annually impounded at end of monsoon by fixing standards and boards on waste weir crest.

Capital Account of Irrigation Works in Deccan and

Name of Work.	DURING YEAR.									
	Direct Charges.					Indirect Charges.				
	Works.	Establishment.	Tools and Plant.	Total.	Direct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	Grand Total.
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.										
PROTECTIVE WORKS.										
<i>In operation.</i>										
1. Nira Canal	78,266	24,021	1,553	1,03,840	2	1,08,898	...	3,363	3,363	1,07,201
2. Mhasvad Tank	836	53	28	417	...	417	...	7	7	494
Total	78,602	24,074	1,581	1,04,257	2	1,04,255	...	3,370	3,370	1,07,625
<i>In abeyance.</i>										
3. Chankapur Tank	344	68	...	412	24	388	...	10	10	398
4. Maladevi do.	...	...	...	...	...	...	...	...	...	...
Total	344	68	...	412	24	388	...	10	10	398
Total, Protective Works ...	78,946	24,142	1,581	1,04,669	26	1,04,643	...	3,380	3,380	1,08,029
PRODUCTIVE WORKS.										
<i>In operation.</i>										
5. Hathmati Canal	...	4	...	104	...	104	...	1	1	105
6. Lower Panjra River Works ...	100	...	...	249	...	249	...	6	6	255
7. Kadva River Works	208	41	...	249	...	249	...	...	...	...
8. Pravara River Works—Lakh Canal ...	411	83	...	494	...	494	...	12	12	506
9. Mutha Canals	32,245	9,961	...	42,206	...	42,206	...	1,395	1,395	43,601
10. Ekruk Tank	...	...	...	...	...	...	6,980	...	6,980	6,980
11. Krishna Canal	9,154	1,827	...	10,981	...	10,981	...	256	256	11,237
Total, Productive Works ...	41,296	11,750	...	53,046	...	53,046	6,980	1,646	8,626	61,672
Total, Major Works	1,20,242	35,892	1,581	1,57,715	26	1,57,689	6,980	5,026	12,006	1,69,695
MINOR WORKS AND NAVIGATION.										
<i>In operation.</i>										
12. Khari Cut	4,192	214	...	4,406	...	4,406	...	30	30	4,436
13. Harjala Tank	...	...	...	...	...	...	...	...	...	...
14. Mhasva do.	...	...	...	...	...	...	...	...	...	...
15. Junda Canals	750	149	...	899	...	899	...	21	21	920
16. Parsul Tank	3,700	970	447	4,223	2	4,221	...	136	136	4,357
17. Pravara River Works—Ojhar Canal ...	1,536	328	...	1,964	...	1,964	...	46	46	2,010
18. Bhátodi Tank	...	...	...	...	...	...	...	...	...	...
19. Matoba do.	...	...	...	...	...	...	...	...	...	...
20. Kasurdi do.	...	...	...	...	...	...	...	...	...	...
21. Shirsuphal do.	...	...	...	...	...	...	...	...	...	...
22. Bhádalvádi do.	4,505	1,124	...	5,629	...	5,629	...	157	157	5,786
23. Koregaon do.	...	...	...	...	...	...	...	...	...	...
24. Ashti do.	1,294	124	...	1,418	...	1,418	3,187	17	3,204	4,622
25. Revári Canal	381	95	...	476	...	476	...	13	13	489
26. Upper Man River Works ...	6	2	...	8	...	8	...	...	...	8
27. Yerla River Irrigation Works ...	4,457	892	399	5,748	...	5,748	...	125	125	5,873
28. Chikhli Canal	...	...	...	...	...	...	...	...	...	...
29. Maini Tank	...	...	...	...	...	...	...	...	...	...
30. Muchkund Tank	...	...	...	...	...	...	...	...	...	...
31. Nilgund do.	43	10	1	54	...	54	...	1	1	55
32. Gadikeri do.	...	...	...	...	...	...	...	...	...	...
33. Dambal do.	...	...	...	...	...	...	107	...	107	107
34. Medleri do.	...	...	...	...	...	...	243	...	243	243
35. Madag do.	...	...	...	...	...	...	...	...	...	...
36. Asundi do.	...	...	...	...	...	...	...	...	...	...
37. Mátnkop do.	...	...	...	...	...	...	...	...	...	...
Total	20,964	3,908	—47	24,825	2	24,823	3,587	546	4,083	28,906
<i>In abeyance.</i>										
38. Gokák Canal, 2nd Section ...	...	...	...	...	...	...	...	...	...	...
Total, Minor Works and Navigation ...	20,964	3,908	—47	24,825	2	24,823	3,587	546	4,083	28,906
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In operation.</i>										
39. Gokák Canal, 1st Section, and Storage Works ...	5,308	295	—351	5,252	...	5,252	...	41	41	5,293
Grand Total	1,46,514	40,095	1,183	1,87,793	28	1,87,764	10,517	5,613	16,130	2,03,894

*Including expenditure charged to "35. Construction

B.

Gujarat for and to end of 1892-93.

To END OF YEAR.									
Direct Charges.					Indirect Charges.				Grand Total.
Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
39,79,173 16,72,651	8,79,116 5,40,521	1,30,268 62,811	50,88,557 19,75,983	7,953 1,473	50,80,604 19,74,510	 7,749	1,54,348 52,802	1,54,348 60,551	52,34,952 20,36,061
55,51,824	13,19,637	1,93,079	70,64,540	9,426	70,55,114	7,749	2,07,160	2,14,899	72,70,013
38,554 20,967	17,935 11,600	7,261 1,456	58,750 34,023	130 68	63,620 33,956	..... .....	3,153 2,161	3,153 2,161	66,773 36,116
59,521	29,535	8,717	97,773	198	97,575	.....	5,314	5,314	1,02,889
56,11,345	13,49,172	2,01,796	71,62,313	9,624	71,52,689	7,749	2,12,464	2,20,213	73,72,902
3,83,636 3,60,593 5,36,367 2,64,268 50,82,938 10,07,089 6,70,095	99,517 73,397 1,38,640 68,691 9,33,889 2,12,509 1,41,291	9,060 3,228 16,960 19,480 1,17,453 9,713 1,682	4,92,213 4,37,218 6,91,967 3,52,439 61,34,300 12,29,311 8,13,068	1,288 37 140 201 12,169 1,194 ...	4,90,925 4,37,181 6,91,827 3,52,238 61,22,131 12,28,117 8,13,068	7,640 8,482 4,316 5,824 52,087 69,948 17,232	19,830 14,336 24,294 13,628 17,611 42,321 27,702	27,470 22,768 28,610 19,452 2,28,698 1,12,269 44,924	5,18,395 4,59,949 7,20,437 3,71,690 63,50,829 13,40,386 8,57,992
83,05,006	16,67,934	1,77,576	1,01,50,516	15,029	1,01,35,487	1,65,469	3,38,722	4,84,191	1,06,19,678
1,39,16,351	30,17,106	3,79,372	1,73,12,829	24,653	1,72,88,176	1,73,218	5,31,186	7,04,404	1,79,92,580
1,33,184 33,437 1,02,795 7,84,009 1,56,277 2,30,056 2,73,898 1,49,237 31,423 1,60,638 1,56,992 30,044 6,05,233 46,811 2,07,424 5,09,061 39,984 2,66,543 1,11,830 6,938 7,020 49,262 61,881 1,26,596 48,805 21,665	31,874 11,936 26,783 1,91,364 41,236 75,181 70,183 35,682 8,495 36,290 53,493 7,661 1,44,175 9,690 93,456 1,06,364 13,611 98,353 26,360 1,700 1,755 10,769 15,324 31,841 10,381 5,762	2,133 2,579 1,129 12,729 9,277 4,535 9,354 2,837 384 2,861 2,621 218 8,122 21 7,782 7,573 208 3,315 2,294 130 140 873 1,155 2,825 1,055 323	1,67,191 47,952 1,30,707 9,88,102 2,06,790 3,09,772 3,58,375 1,86,166 40,812 1,99,789 2,13,106 37,923 7,52,138 56,522 4,07,421 6,22,898 53,803 3,08,211 1,40,484 8,768 8,915 60,909 78,360 1,61,262 80,741 27,730	181 4 6 21 71 144 690 8 5,392 ... 241 2,365 ... 540 267 62 6 14 ... 133	1,67,010 47,948 1,30,701 9,88,081 2,06,719 3,09,828 3,58,085 1,85,148 40,812 1,99,789 2,13,106 37,923 7,52,138 56,522 4,07,421 6,20,533 53,803 3,67,671 1,40,217 8,768 8,915 60,847 78,354 1,61,248 80,741 27,612	6,350 23,052 5,026 14,555 4,792 6,806 13,023 5,579 3,079 5,038 3,882 52,128 1,066 4,787 22,365 917 3,074 11,228 3,074 13 1,034 243 2,083	5,571 2,332 5,203 37,530 4,792 14,808 18,999 7,000 1,699 6,966 10,240 1,266 26,603 1,781 17,354 20,195 2,722 19,165 4,104 259 351 2, 99 2,795 6,350 1,718 1,162	11,921 26,454 10,229 52,365 6,870 20,614 27,022 2,00,727 4,778 12,004 14,122 1,266 78,731 2,347 22,141 42,503 3,663 22,339 15,332 259 364 3,133 3,038 6,360 1,718 3,285	1,78,961 73,382 1,40,930 10,40,446 2,13,539 3,30,242 3,79,707 2,00,727 45,590 2,11,793 2,27,228 39,189 8,30,869 59,369 4,29,562 6,63,056 37,442 3,89,910 1,55,549 9,027 9,279 63,980 81,392 1,67,598 62,459 30,347
44,50,993	11,80,419	86,078	56,97,490	10,150	56,87,340	1,85,389	2,19,344	4,04,733	60,92,073
92,036	70,024	14,246	1,76,306	...	1,76,306	740	12,238	13,978	1,90,284
45,43,029	12,30,443	1,00,324	58,73,796	10,150	58,63,646	1,86,129	2,32,582	4,18,711	62,82,367
8,27,477	1,68,492	20,611	10,16,580	258	10,16,322	348	25,128	25,476	*10,41,798
1,92,86,857	44,16,041	5,00,307	2,42,03,205	35,061	2,41,68,144	3,56,695	7,88,896	11,45,591	2,53,16,735

of Protective Irrigation Works."

A. L. WRIGHT,

For Examiner, Public Works Accounts.

Statement showing the Financial Results of Irrigation Works in
Realizations under Main Heads of

Name of Work.	REVENUE (ACTUAL RECEIPTS).										Revenue	
	Irrigation.			Navigation.	Phalations.	Water-power.	Miscellaneous.	Total.	Refunds of Revenue.	Gross Revenue less Refunds.	Estab	
	Water-works directly paid.	Share of Land Revenue.	Total.								Director.	Executive.
1	2	3	4	5	6	7	8	9	10	11	12	13
IMPERIAL..	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.												
Protective Works.												
1. Nira Canal	83,770	...	83,770	...	53	...	1,671	85,494	1	85,498	4,315	7,893
2. Mhasvad Tank	26,767	...	26,767	...	26	...	592	26,384	...	26,384	1,101	3,334
Total	1,09,537	...	1,09,537	...	78	...	2,263	1,11,878	1	1,11,877	5,416	11,227
Productive Works.												
5. Hathmati Canal	4,007	...	4,007	...	139	...	1,008	5,154	...	5,154	24	108
6. Lower Pánjhra River Works... ..	3,891	6,843	15,534	...	69	...	566	16,169	...	16,169	657	1,764
7. Kádva River Works	9,202	594	9,796	...	269	...	141	10,206	...	10,206	620	1,744
8. Pravara River Works— Lákhi Canal	802	...	802	...	119	...	41	962	...	962	224	794
9. Mutha Canals	1,05,872	42	1,05,915	...	1,374	6,000	1,11,954	2,25,243	1,192	2,24,051	6,540	22,298
10. Ekruk Tank	15,166	...	15,166	...	256	...	10,103	25,515	...	25,515	2,067	7,441
11. Krishna Canal	53,872	...	53,872	...	...	...	3,479	57,351	...	57,351	186	1,519
Total	1,97,803	7,279	2,05,082	...	2,226	6,000	1,37,292	3,40,600	1,192	3,39,408	10,308	35,668
Total, Major Works	3,07,940	7,279	3,14,619	...	2,304	6,000	1,29,555	4,52,478	1,193	4,51,285	15,724	46,895
MINOR WORKS AND NAVIGATION.												
12. Khazri Cut... ..	3,406	...	3,406	...	78	...	351	3,835	...	3,835	75	812
13. Hartala Tank	302	...	302	...	9	...	436	747	...	747	51	235
14. Mhasva do.	341	...	341	...	85	...	290	716	...	716	97	456
15. Jánada Canals	2,985	...	2,985	...	710	...	539	4,234	4	4,230	974	2,610
16. Parani Tank	3,001	...	3,001	...	...	...	12	3,013	...	3,013	40	507
17. Pravara River Works— Ojhar Canal	5,957	76	6,033	...	164	...	509	6,706	...	6,706	433	1,584
18. Bhátodi Tank... ..	4,014	1,351	5,365	...	27	...	214	5,606	21	5,585	324	829
19. Matoba do.	7,550	...	7,550	...	5	...	105	7,660	...	7,660	169	565
20. Kásurdi do.	258	...	258	...	...	...	32	290	...	290	21	64
21. Shirsuphal do.	3,273	...	3,273	...	44	...	73	3,390	...	3,390	338	1,475
22. Bhádalvadi do.	3,833	...	3,833	...	20	...	76	3,929	...	3,929	227	1,154
23. Koregaon do.	961	...	961	...	...	...	10	971	...	971	69	416
24. Ashi do.	5,313	...	5,313	...	88	...	422	5,823	...	5,823	517	2,694
25. Revári Canal	4,201	...	4,201	...	...	...	66	4,267	...	4,267	23	162
26. Upper Mán River Works.	3,096	...	3,096	...	...	...	141	3,237	...	3,237	66	566
27. Yerla River Irrigation Works... ..	6,611	...	6,611	...	...	...	655	7,266	...	7,266	37	613
28. Chikhli Canal	1,035	...	1,035	...	...	...	31	1,066	...	1,066	9	54
29. Maini Tank	5,173	...	5,173	...	...	...	239	5,412	11	5,401	45	379
30. Muchkundi do.	326	...	326	...	15	...	...	341	...	341	2	10
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	1,987	...	1,987	...	50	...	...	2,037	...	2,037	...	...
33. Dambal do.	580	666	1,246	...	...	...	552	1,798	...	1,798	8	158
34. Madari do.	448	...	448	...	...	...	...	448	...	448	10	134
35. Madag do.	2,061	...	2,061	...	...	...	230	2,291	...	2,291	16	142
36. Asundi do.	300	472	772	...	...	...	66	838	...	838	17	126
37. Mávinkep do.	...	916	916	...	...	...	5	921	...	921	...	...
Total, Minor Works and Navigation... ..	65,026	5,468	70,493	...	1,295	...	5,044	76,832	36	76,796	3,318	15,745
PROVINCIAL.												
Minor Works and Navigation.												
39. Gokák Canal, First Section and Storage Works	12,412	...	12,412	...	108	4,920	85	17,475	14	17,461	82	912
GRAND TOTAL	3,84,777	12,747	3,97,524	...	3,707	10,920	1,34,634	5,46,735	1,243	5,45,542	19,424	63,552

Notes.—(1) The irrigation share of the Land Revenue Assessment relates to the Revenue-year 1892-93.

(2) The division of Establishment charges between Revenue Management and Maintenance is made in accordance

C.

Deccan and Gujarāt for the year ending 31st March 1893.

Revenue and Working Expenses.

WORKING EXPENSES.															
Management.			Maintenance and Repairs.												
Department.		Total Revenue Management.	Establishment.				Works.	Repairs.	Sundries.	Tools and Plant.	Plantations.	Total Cost of Maintenance.	Indirect Charges.	Grand Total Working Expenses.	Net Revenue.
Navigation.	Civil Officers.		Director.	Executive.	Medical.	Total.									
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
...	4,188	16,396	2,760	5,049	...	7,809	...	29,880	...	46	1,356	39,541	2,802	58,739	26,754
...	1,371	5,806	416	1,258	...	1,674	...	6,377	...	91	318	8,400	865	15,121	11,263
...	5,559	22,202	3,176	6,307	...	9,483	...	36,257	...	587	1,674	48,001	3,657	73,860	38,017
...	200	332	188	823	...	1,011	...	3,617	...	12	427	5,067	160	5,559	-405
...	1,408	3,329	280	754	...	1,034	31	3,309	...	83	297	5,254	484	9,567	6,602
...	461	2,326	254	712	...	966	...	3,642	...	95	220	4,923	466	8,214	1,992
...	40	1,058	73	256	...	329	...	1,233	...	67	80	1,709	189	2,956	-1,994
...	5,281	34,119	2,183	7,442	...	9,625	...	37,780	...	1,617	783	49,744	5,385	89,248	1,34,803
...	762	10,260	646	2,336	...	2,982	4,930	5,976	...	124	1,024	15,033	1,747	27,043	-1,538
...	3,629	5,834	200	1,625	...	1,825	...	6,748	655	99	551	9,878	494	15,706	41,645
...	11,781	57,767	3,824	13,948	...	17,772	4,961	62,794	655	2,097	3,332	91,611	8,925	1,58,293	1,81,115
...	17,340	79,959	7,000	20,255	...	27,255	4,961	99,051	655	2,684	5,006	1,39,612	12,582	2,32,153	2,19,132
...	170	1,057	50	547	...	597	...	2,377	...	...	10	2,984	208	4,249	-414
...	37	323	13	57	...	70	...	280	...	...	2	352	50	725	-22
...	28	581	23	109	...	132	...	344	...	50	185	711	96	1,388	-672
...	144	3,728	417	1,117	...	1,534	724	5,412	...	200	...	7,570	771	12,369	-8,139
...	150	697	4	44	...	48	...	188	...	50	10	291	85	1,071	1,942
...	323	2,340	135	492	...	627	...	2,261	...	47	247	3,182	370	5,892	814
...	331	1,484	145	373	...	518	...	1,806	...	47	267	2,637	312	4,433	1,162
...	877	1,111	57	193	...	260	...	951	...	50	49	1,300	158	2,549	5,111
...	13	98	8	24	...	32	...	130	...	...	...	162	16	276	14
...	164	1,977	87	332	...	469	...	1,802	...	100	73	2,444	319	4,740	-1,350
...	192	1,573	30	255	...	305	251	880	...	50	91	1,377	236	3,386	543
...	48	533	13	78	...	91	...	363	...	19	...	473	81	1,087	-116
...	248	3,459	112	583	...	695	...	2,514	...	48	265	3,522	547	7,523	-1,705
...	203	383	31	222	...	253	...	973	...	5	41	1,272	61	1,721	2,536
...	154	786	64	552	...	616	...	2,295	...	101	167	3,179	175	4,140	-903
...	325	1,025	126	892	...	1,008	...	3,477	...	101	556	5,142	239	6,406	860
...	52	118	20	116	...	136	...	495	...	5	49	635	28	828	238
...	259	683	44	375	...	419	...	1,451	...	50	225	2,145	118	2,946	2,465
...	16	28	13	37	...	70	...	167	...	4	112	353	11	592	-51
...	169	199	4	16	...	20	...	79	...	...	...	18	1	19	-19
...	104	270	3	51	...	54	30	186	...	...	...	99	3	301	1,736
...	22	166	4	64	...	68	...	336	...	...	...	270	31	671	1,227
...	103	261	16	133	...	149	...	398	...	...	199	746	43	1,050	1,241
...	65	208	21	161	...	182	104	623	...	...	...	909	45	1,162	-324
...	92	92	...	...	...	...	...	...	...	...	...	...	...	92	829
...	3,819	23,182	1,461	6,886	...	8,347	1,109	29,796	...	927	2,548	42,727	4,012	69,921	6,876
...	867	1,861	54	602	...	656	...	2,442	...	302	213	3,612	231	5,704	11,757
...	22,026	1,05,002	8,516	27,743	...	36,258	6,070	1,31,289	655	3,918	7,766	1,85,951	16,825	3,07,778	2,37,764

With the orders contained in Government of India No. 98 A.L., dated 19th August 1884.

A. L. WRIGHT,
For Examiner, Public Works Accounts.

II.—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarāt for the year 1892-93, based on actual Receipts.

Principal Results of Operations for the year ended 31st March 1893.

Irrigation Works.	Direct and Indirect Capital Outlay to end of 1892-93.	Gross Receipts, Direct and Indirect, from all sources.	Working Expenses, Direct and Indirect.	Net Revenue (excluding charges for interest).	Percentage of net Revenue on Capital Outlay to end of year.	Interest at 4 per cent. on Direct Capital Outlay at commencement of year and at 2 per cent on Outlay during year.	SURPLUS REVENUE AFTER PAYING INTEREST OF DIRECT CAPITAL OUTLAY.		EXCESS CHARGES INCLUDING INTEREST OF DIRECT CAPITAL OUTLAY.	
							Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.										
MAJOR WORKS.										
PROTECTIVE WORKS.										
<i>In Operation.</i>										
1. Nira Canal...	52,34,058	55,488	53,739	26,764	51	2,01,147	...	...	1,74,893	2.56
2. Mhaswad Tank...	50,35,501	28,394	16,121	11,263	55	78,972	...	...	67,709	2.45
Total	72,70,013	1,11,877	73,860	38,017	52	2,80,119	...	...	2,42,102	2.52
<i>In Abeyance.</i>										
3. Channāpur Tank...	66,773	...	...	...	...	2,537	...	...	2,537	2.72
4. Nalādevi do...	50,116	...	...	...	...	1,359	...	...	1,359	2.95
Total	1,02,889	...	...	...	...	3,895	...	...	3,895	2.80
Total, Protective Works	73,72,902	1,11,877	73,860	38,017	52	2,84,014	...	...	2,46,007	2.53
PRODUCTIVE WORKS.										
<i>In Operation.</i>										
5. Hāthmati Canal...	5,18,596	5,154	5,559	405	98	19,637	...	...	20,042	2.09
6. Lower Pānjhā River Works...	4,59,949	16,109	5,967	6,602	144	17,465	...	...	10,883	1.51
7. Kādva River Works...	7,29,437	10,306	5,214	1,992	28	27,868	...	...	25,676	2.43
8. Pravara River Works—Laish Canal...	3,71,936	963	2,656	1,994	51	14,099	...	...	16,093	2.06
9. Mutha Canals...	38,50,820	2,24,851	38,248	1,34,505	2.12	2,44,041	...	...	1,09,233	1.17
10. Ekrut Tank...	15,40,386	23,515	27,043	1,523	11	49,124	...	...	50,653	1.90
11. Krishna Canal...	5,67,992	67,351	16,706	41,646	4.64	52,903	9.342	59	...	...
Total, Productive Works	1,06,16,673	3,39,408	1,83,203	1,81,115	1.71	4,04,357	...	...	2,23,242	1.91
Total, Major Works	1,79,92,590	4,51,285	2,52,163	2,19,133	1.22	6,88,371	...	...	4,69,239	1.77
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
12. Khāri Cut...	1,78,931	3,335	4,249	414	23	5,592	...	...	7,006	3.03
13. Hārda Tank...	73,363	747	725	22	33	1,918	...	...	1,896	2.13
14. Mhasva do...	1,40,360	716	1,388	672	48	5,298	...	...	5,900	2.40
15. Jāmda Canals...	10,40,416	4,230	12,309	1,123	78	38,505	...	...	47,844	2.01
16. Pāruni Tank...	2,15,639	3,013	1,071	1,942	29	5,134	...	...	6,242	2.40
17. Pravara River Works—Ojhar Canal...	6,30,245	6,706	5,892	814	25	12,346	...	...	11,532	2.07
18. Bhatodi Tank...	5,79,707	5,685	4,433	1,153	30	14,107	...	...	12,955	1.95
19. Mathe do...	2,00,727	7,666	2,549	5,111	2.55	7,538	...	...	2,415	...
20. Kāsurī do...	45,630	290	2 6	14	37	1,033	...	...	1,919	1.73
21. Shīrapur do...	2,11,769	3,390	4,740	1,350	64	7,879	...	...	9,229	2.97
22. Bhādaivādi do...	2,27,228	3,929	3,386	543	24	8,524	...	...	7,981	2.43
23. Kōngan do...	30,159	971	1,087	118	39	1,517	...	...	1,333	2.16
24* Ashtī do...	8,39,589	5,333	7,638	1,765	61	50,067	...	...	31,763	2.93
25. Berari Canal...	59,969	4,257	1,721	2,536	4.27	2,251	285	27	...	...
26. Upper Mān River Works...	4,28,562	3,237	4,140	903	21	10,297	...	...	17,800	2.05
27. Yerla River Irrigation Works...	6,68,636	7,306	6,408	890	13	24,705	...	...	23,946	2.21
28. Chikhli Canal...	57,412	1,066	828	238	41	2,162	...	...	1,914	1.70
29. Maini Tank...	3,89,910	5,491	2,946	2,545	63	14,707	...	...	14,253	1.85
30. Muchkundi Tank...	1,55,740	941	392	51	33	5,609	...	...	6,560	2.06
31. Nālgund do...	9,027	...	19	19	21	350	...	...	369	2.97
32. Gadkari do...	9,279	2,037	301	1,736	18.11	257	...	...	...	...
33. Dāmbal do...	63,930	1,793	571	1,227	1.92	2,494	...	...	1,307	1.31
34. Medlari do...	91,392	443	600	153	19	3,134	...	...	3,385	2.68
35. Modag do...	1,67,569	2,291	1,059	1,241	74	6,450	...	...	5,209	1.54
36. Asundi do...	64,459	838	1,163	284	32	2,439	...	...	2,754	3.37
37. Mārinkop do...	30,547	921	22	328	2.39	1,104	...	...	275	7.72
Total	69,92,073	76,796	69,921	6,875	1.1	2,29,997	...	...	2,30,122	2.21
<i>In Abeyance.</i>										
38. Gokāk Canal, 2nd Section...	1,90,294	...	...	...	...	7,053	...	...	7,053	2.42
Total, Minor Works and Navigation	82,82,367	76,796	69,921	6,875	1.1	2,34,049	...	...	2,37,174	2.21
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
39. Gokāk Canal, 1st Section, and Storage Works...	10,41,798	17,461	5,704	11,757	1.13	40,543	...	...	28,791	2.35
GRAND TOTAL	2,43,16,735	5,45,642	3,07,773	2,37,794	1.04	9,62,968	...	...	7,25,204	1.90

* The sum at charge being minus, no percentage can be calculated.

A. L. WRIGHT,
For Examiner, Public Works Accounts.

III—C.

Demands and Realizations during the year 1892-93 in Deccan and Gujarât.

Irrigation Works.	Balance of Demands unrealized at commencement of year.	DEMANDS OF THE YEAR.				Total, including Balance at commencement of year.	Deduct—Remissions not including Cash Refunds.	Net Total.	Deduct—Amount unrealized at close of year.	Actual Realizations at close of the year.
		Rabi, 1891-92.	Kharif, 1892-93.	Miscellaneous Receipts.	Total.					
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.										
Protective Works.										
1. Nira Canal	132	41,574	42,874	1,756	86,504	86,636	397	86,239	745	85,494
2. Mhasvad Tank... ..	1,635	11,328	15,436	620	27,384	29,019	...	29,019	2,635	26,384
Total	1,767	52,902	58,310	2,376	1,13,858	1,16,655	397	1,16,258	3,380	1,11,878
Productive Works.										
5. Hathmati Canal	346	2,641	1,138	1,147	4,914	5,260	4	5,256	102	5,154
6. Lower Panjhra River Works.	...	(b) 2,134	6,440	336	(a) 8,209	9,715	...	9,715	122	9,593
7. Kadra River Works	913	5,611	3,664	419	(a) 9,754	10,700	...	10,700	1,088	9,612
8. Pravara River Works—	...	452	350	160	962	968	...	962	...	962
Lakh Canal	...	...	...	...	...	...	...	...	...	...
Mutha Canals	23,825	15,565	99,082	1,11,893	(a) 2,17,516	2,41,241	432	2,40,809	15,708	2,25,201
10. Ekruk Tank	1,462	8,890	12,605	9,070	28,066	26,627	...	26,627	1,012	25,515
11. Krishna Canal	16,413	6,900	28,609	5,476	38,448	37,596	...	37,596	615	37,351
Total	46,506	36,153	1,42,936	1,20,779	3,05,868	3,32,374	436	3,31,938	18,617	3,13,321
Total, Major Works	48,273	89,055	2,01,246	1,20,155	4,10,756	4,68,029	833	4,67,196	21,997	4,45,199
MINOR WORKS AND NAVIGATION.										
12. Khari Cut	1,450	...	4,161	429	4,590	6,010	...	6,010	2,205	3,835
13. Hortola Tank	11	257	1	441	739	750	...	747	...	747
14. Mhasva do.	2	362	87	375	714	716	3	716	...	716
15. Jauda Canals	386	1,625	1,101	1,749	3,875	4,261	6	4,255	21	4,234
16. Parsul Tank	1,446	1,195	360	12	1,567	3,013	...	3,013	...	3,013
17. Pravara River Works—	...	...	...	...	...	...	...	...	...	...
Ojhar Canals	163	4,142	2,062	579	(a) 6,782	6,940	...	6,940	310	6,630
18. Bhitedi Tank	159	2,093	2,166	369	(a) 4,551	4,701	...	4,701	446	4,255
19. Mitola do.	15	1,001	5,632	110	7,648	7,658	...	7,658	—2	7,660
20. Kasurdi do.	...	224	34	32	290	290	...	290	...	290
21. Shirsuphal do.	...	1,458	1,815	117	3,380	3,390	...	3,390	...	3,390
22. Bhidalvadi do.	...	1,628	2,805	99	3,529	3,529	...	3,529	...	3,529
23. Koregon do.	...	730	231	19	971	971	...	971	...	971
24. Asiti do.	412	2,523	2,967	511	6,011	6,413	...	6,413	560	5,853
25. Beasri Canal	520	2,228	1,490	56	3,764	4,284	...	4,284	37	4,321
26. Upper Mha River Works	...	1,662	1,434	141	3,237	3,237	...	3,237	...	3,237
27. Yera River Irrigation Works.	80	(c) 3,918	2,686	655	7,259	7,369	...	7,369	103	7,266
28. Chikhli Canal	96	1,71	945	31	1,047	1,073	...	1,073	7	1,066
29. Maini Tank	...	1,589	2,842	239	4,669	5,578	...	5,578	166	5,412
30. Muchkundi do.	...	201	25	15	341	341	...	341	...	341
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikari do.	126	808	272	427	(a) 1,007	1,132	...	1,132	...	1,132
33. Damhal do.	...	179	260	...	448	448	...	448	...	448
34. Medleri do.	404	1,011	1,081	230	2,322	2,726	...	2,726	435	2,291
35. Madag do.	77	215	196	6	(a) 477	554	...	554	188	366
36. Asundi do.	...	...	...	...	...	...	...	...	...	...
37. Mavinkop do.	...	...	...	...	(a) 5	5	...	5	...	5
Total, Minor Works and Navigation	6,120	28,860	34,632	6,337	69,749	75,589	9	75,580	4,496	71,364
PROVINCIAL.										
MINOR WORKS AND NAVIGATION										
39. Gokak Canal, 1st Section, and Storage Works	34	5,381	7,149	9,088	22,404	22,438	...	22,438	4,963	17,475
GRAND TOTAL	54,127	1,23,496	2,43,038	1,45,375	5,11,909	5,65,836	842	5,65,494	31,456	5,34,038

(a) Exclusive of Irrigation share of consolidated assessment.

(b) Including Rs. 1,308 on account of rabi of 1892-93 shown in Canal Return No. IX.

(c) Including Rs. 116 realized and treated as water-rates by the Executive Engineer.

A. L. WRIGHT,

For Examiner, Public Works Accounts.

IV.—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarát for the year ended 1892-93, based on the Assessment of the year.

Principal Results and Operations for the year ended 31st March 1893.

Irrigation Works.	Capital Outlay (Direct and Indirect) to end of year.	REVENUE ASSESSED DURING THE YEAR.										Working Expenses, Direct and Indirect.	Net Assessed Revenue of the year.	Percentage on Capital Outlay to end of year.
		Direct Assessed Revenue (a).								Indirect Revenue—(Land Revenue due to operation of Canal) (b).	Grand Total.			
		Occupier's Rate.	Owner's Rate.	Plantations.	Water-power.	Navigation.	Miscellaneous.	Total.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
IMPERIAL.														
MAJOR WORKS.														
Protective Works.														
1. Nira Canal	53,34,922	60,036	...	53	...	...	1,703	61,792	...	61,792	68,789	9,053	1,413	
2. Mhaswad Tank	20,35,051	16,907	...	25	...	...	695	26,617	...	26,617	15,121	5,496	1,410	
Total	72,70,013	80,033	...	78	...	...	2,398	88,409	...	88,409	73,800	8,549	1,413	
Productive Works.														
5. Hathmati Canal	5,18,395	5,825	...	139	...	...	1,006	6,922	...	6,922	5,559	1,413	1,413	
6. Lower Panjra River Works	4,69,949	9,959	...	69	...	...	550	9,591	6,643	16,237	8,567	6,070	1,415	
7. Kádra River Works	7,20,437	9,610	...	209	...	...	150	10,039	504	10,623	8,214	2,409	564	
8. Pavara River Works—Lákh Canal	3,71,690	582	...	119	...	...	41	692	...	692	2,956	2,956	2,956	
9. Mutia Canals	68,50,829	65,431	...	1,374	6,000	...	1,04,495	2,08,300	42	2,08,342	89,343	1,19,094	1,19,094	
10. Ekrak Tank	13,40,386	14,760	...	266	...	...	5,814	28,830	...	28,830	27,043	2,313	2,313	
11. Krishna Canal	5,57,002	66,579	...	...	...	...	3,479	40,058	...	40,058	15,706	24,352	24,352	
Total	1,06,18,678	1,73,696	...	2,226	8,000	...	1,18,558	2,99,475	7,279	3,06,754	1,58,203	1,48,461	1,40	
Total, Major Works	1,78,88,691	2,52,729	...	2,304	6,000	...	1,20,351	3,81,88*	7,279	3,89,163	2,32,163	1,57,010	68	
MINOR WORKS AND NAVIGATION.														
12. Khatri Cut	1,73,931	4,874	...	78	...	...	351	4,803	...	4,803	4,249	554	554	
13. Hartala Tank	73,382	150	...	9	...	...	432	637	...	637	725	88	88	
14. Mhasva do.	1,40,930	313	...	85	...	...	290	688	...	688	1,383	703	703	
15. Jámra Canals	10,40,446	4,176	...	710	...	...	539	5,425	...	5,425	12,369	6,944	6,944	
16. Parsul Tank	2,13,589	1,446	...	...	...	...	12	1,458	...	1,458	1,071	387	387	
17. Pavara River Works—Ojhar Canal	3,30,242	3,470	...	164	...	...	414	4,048	79	4,124	5,892	1,768	1,768	
18. Bhatodi Tank	8,78,707	4,035	...	27	...	...	335	4,400	1,351	5,751	4,433	1,318	1,318	
19. Matka do.	2,00,727	6,248	...	5	...	...	185	6,358	...	6,358	2,549	3,809	3,809	
20. Kásurí do.	45,500	235	...	...	...	...	52	307	...	307	276	31	31	
21. Shirsupat do.	2,11,793	3,071	...	44	...	...	73	3,188	...	3,188	4,740	1,552	1,552	
22. Bhádrádrí do.	2,37,228	3,269	...	20	...	...	70	3,355	...	3,355	3,856	501	501	
23. Koregaon do.	39,159	769	...	...	...	...	10	779	...	779	1,057	278	278	
24. Ashti do.	8,80,589	4,178	...	68	...	...	423	4,687	...	4,687	7,628	2,941	2,941	
25. Revári Canal	49,309	4,101	...	...	...	...	56	4,253	...	4,253	1,721	2,532	2,532	
26. Upper Man River Works	4,29,562	3,019	...	...	...	...	141	3,160	...	3,160	4,140	980	980	
27. Yerla River Irrigation Works	6,63,036	6,375	...	...	...	...	655	7,030	...	7,030	6,040	624	624	
28. Chikhli Canal	67,442	1,262	...	...	...	...	91	1,353	...	1,353	818	455	455	
29. Maini Tank	3,39,910	4,910	...	...	...	...	239	5,149	...	5,149	2,446	2,703	2,703	
30. Muchkund Tank	1,65,549	25	...	15	...	...	...	...	...	...	40	392	392	
31. Nigund do.	9,027	...	...	...	...	...	...	...	...	...	19	19	19	
32. Gadikeri do.	4,370	...	...	50	...	...	...	...	1,987	2,037	301	1,736	1,736	
33. Dámbar do.	63,950	387	...	...	...	...	427	814	668	1,480	571	909	909	
34. Modlari do.	81,352	337	...	...	...	...	...	337	...	337	500	163	163	
35. Madag do.	1,67,599	2,215	...	...	...	...	230	2,445	...	2,445	1,099	1,345	1,345	
36. Asundi do.	65,459	116	...	...	...	...	60	382	472	854	1,162	308	308	
37. Mávinhop do.	30,947	...	...	...	...	...	5	5	916	621	92	829	829	
Total, Minor Works and Navigation	60,62,073	58,834	...	1,205	...	...	4,462	65,071	5,468	70,539	69,521	613	613	
PROVINCIAL.														
MINOR WORKS AND NAVIGATION.														
59. Gokak Canal, First Section, and Storage Works	10,41,798	9,357	...	108	9,840	...	85	10,340	...	10,340	5,704	18,688	18,688	
GRAND TOTAL	2,50,23,562	3,20,920	...	3,707	15,840	...	1,25,826	4,66,295	12,747	4,79,042	3,67,718	1,21,264	1,21,264	

(a) Excluding remissions shown in canal Return No. V. for Kharif and Rabi seasons of 1892-93.

(b) Irrigation share of the land revenue assessment.

A. L. WRIGHT,
For Examiner, P. W. Accounts.

Statement of Arces irrigated by Irrigation Works in the Bombay Presidency, excluding Sind, during the year 1898-99.

No.	Name of Canal.	AREA IRRIGATED IN ACRES.										AVERAGE DISCHARGES, CUBIC FEET PER SECOND.				AREA IRRIGATED PER CUBIC FOOT PER SECOND.				REMARKS.																						
		Kharif.		Rabi.		Total.		Flow.		Lift.		Double-cropped.		At Head.		Utilized.		Discharged at Head.			Utilized.																					
		Kharif.	Rabi.	Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated in total.	Percent of total area.	Percent of total area.	Percent of total area.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.		Rabi.																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																					
MAJOR WORKS.																																										
Protective Works.																																										
1	Kin Canal	11,104	7,142	18,246	18,191	55	...	...	265	255	199	221	54.16	28	55.80	30.91	16th October 1892 to 14th January 1893.	...	...	...	...																					
2	Malsavad Tank	3,461	1,428	4,907	4,926	71	1,383	23	31.93	6,076	34.43	...	...	...	...	...	...	Do.	...	...	...																					
Productive Works.																																										
5	Hidmand Canal	587	2,511	2,728	2,609	20	...	...	66	88	22	...	...	...	...	...	...	1st June to 8th September.	...	...	...																					
6	Lower Padma River Works	1,088	2,417	2,611	...	...	...	...	10.64	...	10.66	...	...	...	...	...	...	April to September.	...	...	...																					
7	Kidderi River	968	1,066	1,060	1,348	16	...	...	11.73	17.00	6.88	...	...	...	...	...	...	...	...	...	...																					
8	Pravara River	388	883	883	883	11	...	...	3.70	3.70	1.07	...	...	...	...	...	...	...	...	...	...																					
9	Mulshi Canal	66	128	142	142	13	...	...	3.10	3.10	2.03	...	...	...	...	...	...	...	...	...	...																					
10	Pravara River Works—Jalka Canal.	4,019	1,878	6,797	6,139	89	1,000	11.90	21.26	82.94	...	...	...	...	...	...	...	...	...	...	...																					
11	Elektra Tank	2,151	3,023	3,010	25	83	273	36.52	30.35	...	...	...	...	...	...	...	...	...	...	...	...																					
12	Krishna Canal	1,751	2,045	3,706	3,247	540	11	6.23	50.23	71.30	39	20.32	20.32	45	31	40	28	16th January 1893 to 14th January.	...	...	...																					
Total																						18,742	10,927	21,659	21,300	690	1,847	6713	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total Major Works																						29,387	18,815	45,202	43,781	825	2,739	9,011	...	...	...	...	...	...	...	...	...	...	...	...	...	...
MINOR WORKS AND MATINGATIONS.																																										
23	Malsavad Tank	779	61	842	781	61	...	...	11.94	9.78	2.81	...	...	...	...	...	...	...	...	...	...																					
24	Malsavad Tank	11	112	123	120	31	...	...	0.75	1.4	0.75	...	...	...	...	...	...	...	...	...	...																					
25	Malsavad Tank	757	1,514	2,271	2,271	...	...	...	39.00	68.97	39.00	...	...	...	...	...	...	...	...	...	...																					
26	Malsavad Tank	408	693	1,101	1,084	16	...	...	10.82	10.82	2.03	...	...	...	...	...	...	...	...	...	...																					
27	Malsavad Tank	684	201	885	885	101	11.41	...	5.50	5.50	4.92	...	...	...	...	...	...	...	...	...	...																					
28	Malsavad Tank	374	412	786	756	1	...	...	3.16	3.16	3.16	...	...	...	...	...	...	...	...	...	...																					
29	Malsavad Tank	483	387	870	869	1	...	...	4.71	4.71	3.16	...	...	...	...	...	...	...	...	...	...																					
30	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
31	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
32	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
33	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
34	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
35	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
36	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
37	Malsavad Tank	977	427	1,404	1,105	9	...	...	6.73	6.73	4.92	...	...	...	...	...	...	...	...	...	...																					
PROVINCIAL.																																										
38	Golda Canal, 1st Section	2,821	1,027	3,848	3,700	82	...	...	10.85	16.08	Approsi-	...	...	...	...	...	...	...	...	...	...																					
39	Golda Canal, 2nd Section	36,812	28,575	65,387	64,409	1,673	3,693	5.69	...	...	...	...	...	...	...	...	...	...	...	...	...																					
Total																						17,704	5,728	19,207	19,207	171	969	9.67	...	...	...	...	...	...	...	...	...	...	...	...	...	

† During rain season 8 months and perennial crops are irrigated. The area of this is included in Kharif but must be added to rabi area to get duty of water.

* Besides this water was used for 242 acres on the Chindoin tank which has not been accounted for.

† Area on which compensation is to be made is 16,715.

Statement showing Incidence of Working Expenses and Assessed Water Revenue on Canals in the Bombay Presidency, excluding Sind, during the year 1892-93.

No.	Name of Work.	WATER-RATE ASSESSED.				Gross assessed Revenue from all sources.	Working Expenses and Indirect.	Areas irrigated during the year 1892-93.	WORKING EXPENSES.			OCCUPYING RATE.			TOTAL WATER-RATE, DIRECT AND INDIRECT.			REMARKS.
		Occupier's.	Owner's.	Total Direct.	Total Indirect.				Per Cent.	Per Acre irrigated.	Per Acre Second of Discharge.	Per Acre Second of Discharge.	Per Acre Second of Discharge.	Per Acre Second of Discharge.	Per Acre Second of Discharge.	Per Acre Second of Discharge.		
MAJOR WORKS.																		
Protections Works.																		
1	Nira Canal.	60,098	60,098	60,098	...	60,098	18,246	58,736	58,736	58,736	3.22	289	270	3.29	270	270		
2	Musavir Tank.	10,997	10,997	10,997	...	10,997	15,151	15,151	15,151	15,151	3.05	383	367	4.00	367	367		
Productive Works.																		
5	Hahmat Canal.	5,935	5,935	5,935	6,443	13,878	2,728	5,509	5,509	5,509	3.04	80.90	81	5.15	81	81		
6	Lower Purna River Works.	1,569	1,569	1,569	...	1,569	2,017	2,017	2,017	2,017	3.04	674	658	5.56	658	658		
7	Kadva River Works.	6,873	6,873	6,873	994	7,867	6,481	6,481	6,481	6,481	3.77	838	831	...	831	831		
8	Pravara River Works.	1,257	1,257	1,257	...	1,257	2,004	2,004	2,004	2,004	3.04	293	326	3.38	326	326		
9	Pravara River Works.	9,432	9,432	9,432	...	9,432	18,711	18,711	18,711	18,711	3.13	438	397	3.97	397	397		
10	Pravara River Works.	4,532	4,532	4,532	...	4,532	8,066	8,066	8,066	8,066	3.04	264	264	4.45	264	264		
11	Krishna Canal.	30,579	30,579	30,579	...	30,579	37,043	37,043	37,043	37,043	4.14	854	689	4.86	689	689		
Total																		
MINOR WORKS AND NAVIGATION.																		
12	Neri Canal.	4,374	4,374	4,374	...	4,374	4,907	4,907	4,907	4,907	5.94	732	719	5.94	719	719		
13	Masavir Tank.	333	333	333	...	333	688	688	688	688	1.23	201	201	1.23	201	201		
14	Janra Canal.	4,170	4,170	4,170	...	4,170	13,389	13,389	13,389	13,389	3.17	289	289	3.17	289	289		
15	Janra Canal.	3,470	3,470	3,470	...	3,470	4,124	4,124	4,124	4,124	5.66	105	105	5.66	105	105		
16	Indrad Canal.	4,088	4,088	4,088	...	4,088	5,751	5,751	5,751	5,751	3.32	649	592	3.32	592	592		
17	Indrad Canal.	6,235	6,235	6,235	...	6,235	6,067	6,067	6,067	6,067	3.04	364	364	3.04	364	364		
18	Krishna Canal.	3,671	3,671	3,671	...	3,671	3,189	3,189	3,189	3,189	2.73	103	103	2.73	103	103		
19	Shikhar Canal.	3,289	3,289	3,289	...	3,289	3,289	3,289	3,289	3,289	3.04	609	609	3.04	609	609		
20	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
21	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
22	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
23	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
24	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
25	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
26	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
27	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
28	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
29	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
30	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
31	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
32	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
33	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
34	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
35	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
36	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
37	Shikhar Canal.	4,179	4,179	4,179	...	4,179	4,687	4,687	4,687	4,687	3.00	1,809	1,809	3.00	1,809	1,809		
Total																		
PROVINCIAL.																		
38	Golkat Canal, 1st Section, and Storage Works.	16,777	9,357	9,357	...	9,357	32,340	6,704	3,648	30,692	1.48	340.90	558	2.43	558	558		
GRAND TOTAL.																		
Areas in which consolidated assessments are levied.																		

III—E.

Statement of Quantity and Value of Crops irrigated in the Bombay Presidency, excluding Sind, during the year 1892-93.

	(1) NIRA CANAL.		(2) MHASVAD TANK.		(5) HATHODAT CANAL.		(6) LOWER PACHURA RIVER WORKS.		(7) KADVA RIVER WORKS.		(8) PRAVARA RIVER WORKS—LAKE CANAL.		(9) MUTHA CANALS.	
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.
Gardens and Orchards	80	1,846	69	1,330	...	...	90	2,613	49	1,715	11	385	2	70
Sugarcane	1,639	4,23,826	286	42,300	...	...	493	26,600	21	961	3	98	3	64
Wheat	2,961	50,070	734	22,020	773	33,250	649	10,593	806	40,300	371	13,550	137	6,850
Barley	59	288	67	670	360	10,770	34	765	16	720	4	180	7	315
Rice	98	1,195	135	2,700	382	11,460	99	2,943	...	...	...	...	...	...
Maize	69	614	456	4,560	15	150	...	...	...	...	...	...	...	...
Jowar	2,331	55,834	338	5,070	3	30	...	...	...	...	...	...	...	...
Chino, Ragi, Rala, Wari.	16	79	62	620	158	2,370	...	...	...	...	...	...	...	...
Bajri.	3,324	18,243	157	1,570	...	...	24	302	7	70	1	10	9	162
Miscellaneous	1	6	...	...	...	...	...	...	...	...	...	...	...	...
Grain, Urid, Mug	2,102	38,112	276	5,520	918	22,350	38	348	133	2,394	25	450	...	...
Tur	29	294	11	230	...	...	2	11	...	...	...	...	...	...
Peas	3,161	1,20,255	1,888	69,400	...	...	208	1,733	468	32,760	96	6,720	166	11,620
Ground-nut	13	156	...	...	...	...	426	9,945	1	10	...	...	...	...
Miscellaneous	2,081	41,721	792	39,600	...	...	1	8	62	1,116	17	300	17	806
Fodder	17	495	1	20	...	...	...	...	1	60	...	...	...	...
Lucerne, &c.	5	51	...	...	...	...	383	3,509	...	...	6	66	...	...
Tag (Hemp)	...	...	...	...	...	...	1	17	22	242	...	...	4	400
Fibres	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dyes	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drugs and Narcotics.	2	57	1	50	...	...	1	110	...	...	...	...	...	...
Oil-seeds	6	288	6	120	...	...	18	231	...	...	...	...	...	...
Mustard, Sesam...	5	42	1	20	...	...	5	24	...	...	...	...	...	...
Linseed, Castor	11	239	1	20	24	760	40	1,596	...	...	...	...	...	...
Chilly and Onions	161	4,567	165	6,600	...	...	...	...	30	1,800	9	540	1	60
Condiments	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gauic, Turmeric and	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	10	2,060	...	...	84	3,360	46	1,424	102	4,080	7	280	19	760
Melhi	11	10	...	...	8	...	...	...	16	160	2	20	14	140
Land insufficiently irrigated	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	18,246	7,67,658	4,997	2,06,430	2,728	75,140	2,617	88,054	1,959	16,688	483	27,131	883	21,576
Area on which consolidated assessment is levied.	...	...	...	...	...	...	...	...	...	...	...	...	...	...

* 18 Gunthas.

AXX

Area on which consolidated assessment is levied.

VIII—E—continued.

[illegible]

III—E—concluded.

	(29) MAIN TANK.		(30) MURKUNDI TANK.		(32) GADKERI TANK.		(33) DA'MAL TANK.		(34) MEDERI TANK.		(35) MADRI TANK.		(36) ANANDI TANK.		(37) MAYNOR TANK.		(38) GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS.		TOTAL.	
	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.	Area irri- gated.	Estimated value.		
Gardens and {	29	435	...	...	...	...	37	962	44	2,628	75	6,000	6	128	...	...	206	10,300	1,034	40,030
Orchards.	18	900	...	Not known.	...	...	16	2,595	...	...	46	6,855	7	350	...	...	28	2,800	1,642	1,60,839
Sugarcane	34	6,800	...	...	...	...	...	...	...	...	...	...	...	...	...	...	101	20,200	8,851	22,85,815
	169	3,690	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	300	10,768	2,76,935
Wheat	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	154	3,850	635	16,076
Barley	13	325	...	...	...	...	25	500	34	860	270	9,450	4	75	...	...	82	2,460	2,860	96,040
Rice	17	330	...	...	...	...	14	140	...	...	...	...	1	11	...	...	1,361	34,025	2,179	45,071
Maize	121	2,600	...	Not known.	...	...	...	...	...	...	...	...	...	...	...	...	385	11,850	5,871	1,44,988
Jowar	30	600	...	...	...	...	...	...	...	...	...	...	...	...	...	...	273	5,460	668	10,380
Bajri	41	820	...	...	...	...	16	128	1	15	...	...	1	8	...	...	11	220	4,871	44,373
Chino, Ragi, Rala, Wara	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	124	2,464	...	...	...	...	...	...	...	...	...	...	...	...	...	...	236	3,540	968	33,158
Gram, Urd, Mug	7	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	197	3,302
Pulses	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	241	1,975
Peas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Groundnut	430	17,200	...	...	...	...	...	...	...	...	2	46	...	...	...	...	140	4,200	11,242	4,28,844
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fodder Crops	1	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	58	742
Locowe, &c.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3,740	1,02,414
Fibres	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tag (Hemp)	...	...	...	...	...	...	...	...	2	55	...	...	...	...	...	...	...	...	...	...
Dyes	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drugs	1	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Narcotics	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mustard, Sesam	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Linseed, Castor-oil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments	15	900	...	...	...	...	1	30	10	287	340	10,206	21	526	...	...	560	22,400	1,851	69,316
Miscellaneous	57	1,600	...	...	...	...	4	160	...	...	...	...	...	...	...	...	98	1,120	493	18,851
Chilly and Onions	...	...	...	...	...	...	202	3,030	...	...	...	...	...	...	...	...	217	3,255	610	7,712
Garlic, Turneric and Methi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Land insufficiently irrigated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	1,101	38,816	...	...	...	...	315	7,545	95	3,907	741	32,557	64	1,259	...	...	3,848	1,27,095	65,487	39,47,775
Total	...	...	3	Not known.	...	...	97	...	...	...	...	...	124	...	...	...	...	...	999	...
Area on which consolidated assessment is levied.	...	...	...	...	337	...	...	...	...	...	...	...	...	...	441	...	...	...	...	...

S T A T E M E N T IV.—E.

IV.—E.

Comparative Statement of Irrigation and Rainfall for the years 1891-92 and 1892-93 in the Bombay Presidency, excluding Sind.

No.	Works supplying Irrigation.	Civil Station.	Total Area in Acres.	Cultivated Area in Acres.	AREA IRRIGATED IN ACRES.						RAINFALL.		REMARKS.	
					1891-92.			1892-93.			1891-92.	1892-93.		
					Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
MAJOR WORKS.														
Protective Works.														
1	Nira Canal	Poona	307,559	171,868	9,595	19,208	28,803	11,104	7,142	18,246	*13.86	+32.01	* Average of 7 stations. + Do. of 8 do. + Average of fall at Rajawadi and Khairpur.	
2	Mhasvad Tank	Satara, Sholdpur and Pant Pratinidhi State.	123,045	106,214	3,544	4,760	8,304	3,661	1,436	4,997	13.71	+34.11		
	Total	.....	436,604	278,082	13,139	24,028	37,167	14,865	8,578	23,243	...	...		
Productive Works.														
5	Hithmati Canal	Ahmedabad	44,744	8,000	1,367	1,349	2,716	387	2,341	2,728	22.68	44.70	* Average of 7 stations. + Do. of 8 do. + Average of fall at Rajawadi and Khairpur.	
6	Lower Panjira River Works	Khandesh	13,117	12,627	1,593	1,010	2,603	1,668	1,049	2,617	22.54	23.21		
7	Kidwa River Works.	Waghad Tank	...	...	...	...	...	...	...	...	...	...		{
		Palghod Canal	...	...	...	...	...	...	...	...	...	...		
		Other Tambat Canal	...	...	...	...	...	...	...	...	...	...		
	Wadali Canal	Do.	...	...	...	...	...	...	...	...	...	...		28.89
	Do.	Do.	...	...	...	...	...	...	...	...	...	...		37.15
	Do.	Do.	...	...	...	...	...	...	...	...	...	...		32.03
8	Poona River Works—Kalis Canal.	Ahmednagar	94,087	49,800	7,877	6,384	14,061	4,919	3,173	8,092	17.60	43.79		
9	Mutha Canals	Poona	17,132	15,535	1,597	1,502	3,100	2,255	2,045	4,299	17.60	35.84		
10	Erur Tank	Sholdpur	3,253	3,253	3,253	3,253	3,137	2,425	6.13	3,088	22.90	35.84		
11	Krishna Canal...	Satara	27,407	25,563	3,259	2,116	5,374	1,751	2,946	3,796	16.66	36.13		
	Total	.....	296,793	137,197	17,184	14,186	31,370	11,722	10,237	21,959	...	...		
	Total, Major Works	.....	703,397	415,279	30,323	38,214	68,537	26,387	18,815	45,202	...	...		

XXX

MINOR WORKS AND NAVIGATION.									
12	Kheri Cut	...	...	...	1,474	...	1,474	778	64
13	Haratia Tank	...	...	...	142	140	142	1	98
14	Mhasra do.	...	...	...	154	154	154	11	112
15	Mhasra do.	...	...	...	321	321	321	77	1,314
16	Faisal Tank	...	...	...	413	266	413	403	388
17	Pravara River Works—Ojhar Canal	...	...	...	2,691	1,928	2,691	408	695
18	Bhatodi Tank	...	...	...	969	969	969	408	695
19	Naoba do.	...	...	...	1,142	888	1,142	684	201
20	Kaurdi do.	...	...	...	52	88	52	31	70
21	Shirapal do.	...	...	...	4,500	2,500	4,500	963	412
22	Bhatavadi do.	...	...	...	3,000	2,400	3,000	848	374
23	Ashta do.	...	...	...	66	363	425	47	265
24	Karagaon do.	...	...	...	1,143	1,143	1,143	677	437
25	Reveri Canal	...	...	...	14,476	608	14,476	91	920
26	Upper Man River Works	...	...	...	8,543	7,693	8,543	611	428
27	Yera River Irrigation Works	...	...	...	11,284	10,680	11,284	956	1,206
28	Chibhli Canal	...	...	...	1,871	1,478	1,871	384	1,881
29	Maini Tank	...	...	...	4,976	4,625	4,976	58	269
30	Muchkund Tank	...	...	...	5,570	3,417	5,570	685	416
31	Nigund do.	...	...	...	...	...	...	...	...
32	Gaditern do.	...	...	...	...	...	...	...	...
33	Dambal do.	...	...	...	...	...	...	...	...
34	Medleri do.	...	...	...	...	...	...	...	...
35	Madag do.	...	...	...	...	...	...	...	...
36	Asundi do.	...	...	...	...	...	...	...	...
37	Mavinrip do.	...	...	...	...	...	...	...	...
Total									
PROVINCIAL.									
39	Gokak Canal, 1st Section	...	...	...	...	...	...	...	...
GRAND TOTAL									
Average of 55 Stations.									

Area on which consolidated assessment is levied.

Note.—The figures in column 4 are those of gross area under command, and those in column 5 of the net irrigable area at present.

STATEMENT F.

Statement showing the Operation of Irrigation Works in the Deccan and Gujarat for the year 1892-93.

No.	Names of Works.	AMOUNT DUE, 1892-93.		REMISSIONS.		TOTAL.		Grand Total.	REMARKS.
		Kharif, 1892-93.	Rabi, 1892-93.	Kharif.	Rabi.	Kharif.	Rabi.		
1	2	3	4	5	6	7	8	9	10
	MAJOR WORKS.								
	<i>Protective Works.</i>								
1	Nira Canal	42,874	17,162	...	...	42,874	17,162	60,036	
2	Mhasvad Tank	15,437	4,560	...	...	15,437	4,560	19,997	
	Total	58,311	21,722	...	...	58,311	21,722	80,033	
	<i>Productive Works.</i>								
5	Hathmati Canal	1,150	4,706	24	7	1,126	4,699	5,825	
6	Lower Pánjhra River Works	6,441	2,518	...	...	6,441	2,518	8,959*	
7	Kádva River { Waghad Tank. Works. { Falkhed Canal. Ojhar Tambat Canal.	2,892	3,980	...	...	2,892	3,980	6,872	
	Waddli Canal.	536	945	...	...	536	945	1,481	
	Pravara River Works—Lákh Canal	235	1,022	...	...	235	1,022	1,257	
8	Mutha Canals	566	182	16	...	550	182	532	
9	Ekrúk Tank	90,082	6,349	...	...	90,082	6,349	96,431	
10	Krishna Canal	12,605	2,155	...	...	12,605	2,155	14,760	
11	Krishna Canal	28,669	7,910	...	...	28,669	7,910	36,579	
	Total	1,12,976	29,767	40	7	1,12,936	29,760	1,72,696	
	Total, Major Works	2,01,287	51,489	40	7	2,01,247	51,482	2,52,729	
	MINOR WORKS AND NAVIGATION.								
12	Khári Cut	4,966	213	805	...	4,161	213	4,374	
13	Hartáda Tank	1	195	...	...	1	195	196	
14	Mhasva do.	86	227	...	...	86	227	313	
15	Jámda Canals	1,101	3,075	...	...	1,101	3,075	4,176	
16	Parsul Tank	360	1,086	...	...	360	1,086	1,446	
17	Pravara River Works—Ojhar Canal	2,089	1,408	27	...	2,062	1,408	3,470	
18	Bhátodi Tank	2,198	1,872	32	...	2,166	1,872	4,038	
19	Matoba do.	5,632	616	...	...	5,632	616	6,248	
20	Kasurdi do.	33	202	...	...	33	202	235	
21	Shirsuphal Tank	1,816	1,255	...	...	1,816	1,255	3,071	
22	Bhádálvadi do.	2,805	484	...	...	2,805	484	3,289	
23	Koregaon do.	231	538	...	...	231	538	769	
24	Ashi do.	2,967	1,209	...	...	2,967	1,209	4,176	
25	Revád Canal	1,510	2,733	30	16	1,480	2,717	4,197	
26	Upper Mán River Works	1,434	1,585	...	...	1,434	1,585	3,019	
27	Yaria River Irrigation Works	2,686	3,695	...	6	2,686	3,689	6,375	
28	Chikhli Canal	945	307	...	...	945	307	1,252	
29	Maini Tank	2,842	2,068	...	...	2,842	2,068	4,910	
30	Muchkund Tank	25	...	...	...	25	...	25	
31	Nilgund do.	...	...	...	...	...	...	...	
32	Gadikeri do.	...	...	...	...	...	...	...	
33	Dámbal do.	272	115	...	...	272	115	387	
34	Medleri do.	269	63	...	...	269	63	332	
35	Madag do.	1,081	1,134	...	...	1,081	1,134	2,215	
36	Asundi do.	196	120	...	...	196	120	316	
37	Mávinkop do.	...	...	...	...	...	...	...	
	Total	35,545	24,205	894	22	34,651	24,183	58,834	
	PROVINCIAL.								
39	Gokák Canal, 1st Section, and Storage Works	7,139	2,218	...	...	7,139	2,218	9,357	
	GRAND TOTAL	2,43,971	77,912	934	29	2,43,037	77,833	3,20,920	

*Water-rates on dry land and enhanced water share of consolidated revenue on Manual Irrigation.

I—F.

Statement showing Water-rates per Acre in force during 1892-93 on Irrigation Works in the Bombay Presidency, excluding Sind.

1	2	WATER-RATES.					8	9	10	11
		Class I.	Class II.	Class III.	Class IV.	Class V.				
		Perennial. ^a	Eight months.	Four months.	Monsoon dry.	Special hot weather.				
		3	4	5	6	7				
	MAJOR WORKS.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
	Protective Works.									
1	Nira Canal	10	4 0 0	2 0 0	0 12 0	5 0 0				Half rates are levied on irrigation from leakage water picked from mains at the expense of the cultivators.
2	Mhasvad Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
	Productive Works.									
5	Hathmati Canal	10	13 0 0	2 0 0	1 0 0	6 0 0				‡ Rice flooding land is charged at Re. 1.
6	Lower Pānjhā River Works... (Palkhed Canal)	10	4 0 0	2 0 0	1 0 0	4 0 0				
7	Kādva River (Ojhar Tāmbh Works, Canal)	8	4 0 0	2 0 0	1 0 0	6 0 0				
8	Pravara River Works—Lākh Canal	8	4 0 0	2 0 0	1 0 0	6 0 0				
	First Section, i.e., within the Poona City and the suburban Municipal and Cantonment limits or within one mile of these limits.	A. 50 B. 9 C. 6	5 0 0	2 0 0	1 4 0	6 0 0				
	Second Section, i.e., for all villages excepting those within the above-men- tioned limits within a radius of 8 miles from Poona.	A. 25 B. 18 C. 12	5 0 0	2 0 0	1 4 0	6 0 0				
	Third Section, i.e., for vil- lages beyond those limits	A. 18 B. 12 C. 10	4 0 0	2 0 0	1 0 0	6 0 0				
	For pān gardens wherever situated throughout the canal	30	.....	.....	.....	.....				
10	Ekrak Tank	10	4 0 0	2 0 0	0 12 0	6 0 0				
11	Erishna Canal	22	4 0 0	2 0 0	1 0 0	6 0 0				
	MINOR WORKS AND NAVIGATION.									
12	Khatri Cut	14	17 0 0	5 0 0	1 0 0	0				
13	Hartals Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
14	Mhasva Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
15	Jamda Canals	16	4 0 0	2 0 0	0 8 0	4 0 0				
16	Parsul Tank	16	.....	4 0 0	1 0 0	6 0 0				
17	Pravara River Works (Ojhar Canal)	8	4 0 0	2 0 0	0 8 0	4 0 0				
18	Bhātodi Tank	12	4 0 0	2 0 0	1 0 0	4 0 0				
	Matoba Tank	A. 18 B. 12 C. 10	4 0 0	2 0 0	1 0 0	6 0 0				
	Pān gar- dens	30	.....	.....	.....	.....				
20	Kasurdi Tank	A. 16 B. 12 C. 10	4 0 0	2 0 0	0 12 0	6 0 0				
21	Shirsuphal Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
22	Bhādalvādi do.	10	4 0 0	2 0 0	0 12 0	4 0 0				
23	Koregaon do.	6	2 0 0	2 0 0	2 0 0	2 0 0				
24	Ashti do.	12	4 0 0	2 0 0	0 12 0	4 0 0				
25	Revāri Canal	18	4 0 0	2 0 0	0 12 0	6 0 0				
26	Upper Mān River Works ...	18	4 0 0	2 0 0	1 0 0	6 0 0				
27	Yēna River Irrigation Works	18	4 0 0	2 0 0	1 0 0	6 0 0				
28	Chikhli Canal	18	4 0 0	2 0 0	0 12 0	6 0 0				
29	Maini Tank	18	4 0 0	2 0 0	0 12 0	6 0 0				
30	Muchkund Tank	8	4 0 0	.....	.....	.....				
31	Nilgund do. ... ..	.....	.....	.....	.....	.....				
32	Gadikeri do. ... ..	.....	.....	.....	.....	.....				
33	Dambal do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
34	Medleri do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
35	Madag do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
36	Asundi do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
37	Māvinkop ... ..	.....	.....	.....	.....	.....				
	PROVINCIAL.									
39	Gokāk Canal, 1st Section, and Storage Works	10 (a) 7	(b) 3 0 0 (c) 6 0 0	(d) 1 8 0 (e) 2 0 0	0 12 0	(f) 5 0 0				

Notes.—(1) For lift irrigation half the ordinary rates are charged.

(2) Double the ordinary rates are charged as penal rates for taking water without permission.

(3) Leakage or percolation rates are the same as ordinary rates.

STATEMENT G.

Statement showing Areas and Water-rate Assessments during 1892-93 according to the system of classification adopted in fixing the Scale of Water-rates.

Number	Name of Work.	CLASS I.—PERENNIAL.		CLASS II.—8 MONTHS.		CLASS III.—4 MONTHS.		CLASS IV.—MONSOON DRY.		CLASS V.—SPECIAL HOT WEATHER.		MISCELLANEOUS.		GRAND TOTAL.		REMARKS.
		Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	
	MAJOR WORKS.															
	Protective Works.															
1	Nira Canal	1,734	16,632	4,526	18,026	5,906	11,031	3,890	2,914	2,171	10,775	10	18	15,246	60,033	
2	Mhaswad Tank	342	3,527	2,252	9,356	1,348	2,935	234	173	800	3,929	1	76	4,897	19,997	
	Total	2,076	20,149	6,808	27,382	7,254	14,017	4,123	3,087	2,971	14,704	11	94	23,243	80,033	
	Average rate	9.70		4.02		2.01		0.75		4.84		8.65		3.44		
	Productive Works.															
5	Hathmati Canal	123	1,191	382	1,145	2,336	4,669	2	2			8	8	2,728	5,924	
6	Lower Panjhra River Works	231	1,191	141	569	909	1,207	15	16	21	83			902	3,093	
7	Kadva River	34	272	105	436	313	649	12	14	17	106	2	4	433	1,491	
8	Wadai Canal	10	78	168	937	140	61	7	18	18	123	14	28	338	1,257	
9	Pravara River Works—Left Canal	37	203	17	68	100	199	2	1			2	2	153	535	
	First Section, i.e. within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits.	A. 738	30,781													
	Second Section, i.e. for all villages excepting those within the above-mentioned limits within a radius of 8 miles from Poona.	B. 454	3,559													
	Third Section, i.e. for villages beyond those limits.	C. 201	1,173	254	1,330	293	840	5	7							
9	Mutha Canals	A. 2,279	45,698													
	For pan gardens wherever situated throughout the Canal	B. 44	635									4	280	6,707	96,431	
		C. 90	1,054													
		A. 446	5,593	861	2,739	895	1,819	365	365							
		B. 12	99													
		C. 19	146													
10	Ekrui Tank	37	890													
11	Krishna Canal	724	7,073	1,161	4,633	379	775	479	308	293	1,797	1	84	5,038	14,704	
	Total	1,826	26,814	2,048	7,689	189	403	3	3	232	1,663		5	3,706	30,579	
	Average rate	6.785	1.36,624	5.492	31,896	6.336	12,509	0.23	898	646	4,175	50	443	20,244	1,66,799	
		18.7		3.08		2.02		0.03		6.44		8.96		5.22		
	MINOR WORKS AND NAVIGATION.															
12	Bhatri Cut	3	21	773	4,191	52	179					9	13	842	4,374	Inclusive of remissions.
13	Bartala Tank				63	195		1	1					89	106	
14	Mhaswa Tank	8	75	5	17	109	217			1	4			123	319	
15	Jamda Canals	62	554	54	216	1,020	8,001	632	321	24	55			2,271	4,177	
16	Paraul Tank	195	1,549	52	218	690	1,419	92	62	62	242			1,100	3,471	
17	Pravara River Works (Ojhar Canal)	33	811	537	2,158	730	1,628	3	4	5	7			1,337	4,083	
18	Bhatoli Tank	A. 290	5,045													
		B. 2	21	106	448	162	343	319	319			4	18	885	6,249	
19	Matoba do.	C. Pan garden—2	55													
		A. 1	2													
20	Kasundi do.	B. 1	2	82	138	40	79	26	21					101	238	
		C. 156	1,940													
21	Shirsuphal do.	B. 28	249	223	887	108	895	177	132			2	8	786	3,071	
		C. 6	69													
		A. 201	2,057													
22	Bhalsalvadi do.	B. 12	108	128	515	101	877	156	118			1	12	670	3,290	
		C. Pan garden—7	65													
23	Koregaon do.	36	225	96	180	169	334	6	18	4	8			392	769	
24	Ashti do.	81	876	377	846	429	1,123	101	145	206	1,088			1,114	4,176	
25	Revadi do.	82	1,444	377	1,535	544	1,121			8	148			1,011	4,243	
26	Upper Man River Works	10	188	445	1,328	223	434	332	232	31	268	6	9	1,039	3,919	
27	Vadia River Irrigation Works	49	870	900	8,837	733	1,623	59	52	11	66	3	6	1,331	40,381	*Includes remission of Rs. 46.
28	Chikhli Canal	21	276	293	831	28	55	6	6	9	64			269	1,232	
29	Maini Tank	52	919	552	2,227	307	636	71	55	118	1,082	1	1	1,101	4,916	
30	Muehundi do.	2	23	1	2									3	25	
31	Nirund do.															
32	Ganikeri do.															
33	Dambal do.	2	33	19	70	32	184					202	101	315	387	
34	Medhari do.	167	167	3	17	51	106	4	2	12	45			36	337	
35	Madag do.	46	4.8	94	567	597	1,170	2	3			12	8	741	2,215	
36	Asundi do.	9	88	25	101	21	42	4	2	5	23			61	818	
37	Mavikop do.															
	Total	1,408	17,198	4,900	20,904	7,246	15,571	2,100	1,513	534	5,538	240	178	16,437	68,890	
	Average rate	12.2		4.26		2.15		0.72		6.81		0.73		5.58		
	PROVINCIAL.															
	Gokak Canal, 1st Section, and Storage Works	132	1,318	908	2,725	1,793	3,158	502	444	204	1,020	217	696	8,848	9,387	
38	Grand Total	10,401	1,65,284	18,117	72,597	22,030	46,147	7,748	5,912	4,355	23,430	518	1,409	99,772	3,16,078	*Exclusive of 1,715 acres of Manual Bagayat area and Rs. 5,885 enhanced water rates on old works on the Lower Panjra system.
	Average rate	1.59		4.08		2.04		0.76		5.98		2.73		4.94		

Note.—The difference between the figures of total areas and assessments in this statement and those in Statements I—E to IV—E is due to difference in treatment of tractions in some cases, and in others to the fact that the figures in this statement are more or less hypothetical and are arrived at on the assumption that certain areas are assessed at certain rates.

Statement showing Operations of the year 1892-93.

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PART I.

MAJOR WORKS.

PROTECTIVE IRRIGATION WORKS.

(1).—NIRA CANAL.

At the close of the previous year the irrigable area under command of the canal was 159,876 acres, and the first 10 miles of the large distributary No. 59 had been opened. During the year under review another 5 miles of this distributary was brought into operation, adding 11,992 acres to the command, making a total of 1,71,863 acres.

2. The total area irrigated during the year was 18,246 acres. The following table gives the result of the previous five years and of the present year :—

Years.				Kharif.	Rabi.	Total.	Water-rates assessed.
				Acres.	Acres.	Acres.	Rs.
1887-88	...	...	...	2,765	2,763	5,528	7,329
1888-89	...	...	...	4,209	14,350	18,559	20,671
1889-90	...	...	...	9,819	12,111	21,930	24,688
1890-91	...	...	...	8,920	7,993	16,913	36,226
1891-92	...	...	...	9,595	19,268	28,863	66,390
1892-93	...	...	...	11,104	7,142	18,246	60,036

3. The total area irrigated was 10,617 acres less than in 1891-92. The kharif season showed an increase of 1,509 acres, principally due to the fodder crop 1,958 and sugarcane 924 acres. There was a large decrease in bajri, 1,620 acres. But the rabi season showed a decrease of 12,126 acres, or nearly 63 per cent. on last year's area. This was entirely due to the very plentiful and opportune rainfall in October and the beginning of November. The decrease on jowari alone was 11,832 acres.

4. The excess of the measured area over that applied for, as shown in the following table, was considerably less than before; the reason for the difference that does exist is as stated last year, namely, that the cultivators put down in the applications the minimum area on which they can be charged and often irrigate more :—

Seasons and years.				Applied for.	Irrigated.	Difference.	Percentage of difference on area applied for.
				Acres.	Acres.	Acres.	
<i>Kharif.</i>							
1891-92	...	...	...	7,878	9,595	1,717	.....
1892-93	...	...	...	9,921	11,104	1,183	.....
<i>Rabi.</i>							
1891-92	...	...	...	11,653	19,268	7,615	.....
1892-93	...	...	...	5,260	7,142	1,882	.....
Total				19,531	28,863	9,332	47.72
{ 1891-92				15,181	18,246	3,065	20.19
{ 1892-93							

5. The rainfall of the year was exceptionally high, and compares with last year as follows :—

			1891-92.	1892-93.
			Inches.	Inches.
Kharif	...	...	9.08	21.34
Rabi	...	...	4.77	10.67

Stations.	1892.			Average for 10 years from 1882 to 1891 inclusive.	Average for 5 years from 1888 to 1892 inclusive.
	Kharif.	Rabi.	Total.		
	In. c.	In. c.	In. c.	In. c.	In. c.
Pimpri	13 96	10 76	24 72	20 08	20 99
Vadgaon	26 64	12 06	38 70	19 74	20 02
Pandhara	20 2	11 49	31 51	19 22	21 29
Barāmati	19 65	13 55	33 20	19 22	20 95
Sansar	26 35	10 01	36 36	*19 90	23 60
Haturna	20 94	12 11	33 05	+19 91	22 80
Nimbgaon	21 79	7 91	29 70	+18 59	20 96
Bārda	Not gauged	7 46	... ..	... ..	... ..
Total	149 35	85 35	... ..	... ..	... ..
Average	21 34	10 67	... ..	... ..	... ..
Total as per Statement IV—E. ...	32	01	... ..	... ..	... ..
Virvadi bangalow	15 47	10 90	26 37	†20 33	20 81
Indápur	16 28	6 30	22 58	24 24	21 50

6. The first flood in the Nira river occurred on the 9th July, from which date there was more water than was required for irrigation, and owing to the exceptionally heavy rain in October, it was unnecessary to draw upon the storage at Bhátgar until the 28th November. The volume impounded in this reservoir was about 4,000 million cubic feet and was very largely in excess of the requirements during the year.

7. The monthly average discharge in the canal is given below. The first column shows the average struck on the number of days the canal was actually open, and the figures correspond with those reported in the monthly statements of irrigation, while the second column gives the true average discharge for the months, found by dividing the volume by the full number of days in the month:—

Month.	Average actual discharge taken on number of days open.	Mean discharge taken on full number of days in month.
1892.		
April	159	137.5
May	194	106.5
June	171	57
July	201	123
August	258	241.5
September	289	202
October	252	252.5
November	238	175
December	287	287
1893.		
January	213	212
February	191	170.5
March	213	158
Total	2,666	2,122
Monthly average	222	177

8. The working expenses, including direction and indirect charges, amounted to Rs. 58,739. With 96 miles of main canal in operation this gives a rate of

* 8 years.

† 5 years.

‡ 7 years.

Rs. 612 per mile, and it includes the maintenance of 124 miles of distributaries. The expenditure per acre irrigated was necessarily high, due to the small area watered in the rabi season; the rate was Rs. 3.22 against Rs. 1.49 and Rs. 1.80 of the previous two years respectively. The working expenses, include a sum of Rs. 9,828 on special repairs, which consisted of strengthening the banks by puddled earth cores, where they were found to be unsafe or leaky, due to the nature of the soil of which they were made. This is not an annually recurring charge, but it will probably figure as an extra burden on the maintenance for the next two years. There was a small decrease in the establishment charges, due to the transfer of a lower subordinate to another district.

9. The gross revenue from all sources amounted to Rs. 61,792, consisting of Rs. 60,036 for water-rates assessed on the total irrigated area of 18,246 acres and Rs. 1,756 from other sources. The rate of water-rate assessment per acre thus works out at Rs. 3.29 per acre against Rs. 2.30 of the previous year. The net revenue was Rs. 61,792—Rs. 58,739=Rs. 3,053, or Rs. 22,361 less than the previous year.

10. The expenditure on plantations was Rs. 1,356 and receipts Rs. 716. The trees were not counted during the year.

11. The cost of measuring the irrigated area was Rs. 2,102, which is 1 anna 10 pies per acre against 11 pies of last year. The reason for this comparatively high rate is the small total area under irrigation, coupled with the increase in the area of the high rated perennial, 8 months and hot weather crops, which require more careful measurement than 4 months crops.

12. Observations were made to obtain the duty of water, and the results are given below; but in a year of such plentiful rainfall, and with an excessive storage supply, the efficiency of the canal cannot be properly tested. In Statement I—E an approximation is made of the water run to waste in the kharif season, based on the observations made during the rabi season, and the duty given there is for the whole canal. In the subjoined table, the duty has been calculated of the water utilized as far as the 92nd mile, Aqueduct No. 22, and the results thus obtained are certainly more reliable than those given in Statement I—E, but they are unsatisfactory, for the reasons given above, and the low duty indicated is due to the small area irrigated, and probable waste at the end of all the distributaries:—

Days.	True average discharge at head. Cubic feet per second.	Average discharge at Nimboan Aqueduct. Cubic feet per second.	Quantity utilized. Cubic feet per second.	Area irrigated. Acres.	Duty per cubic foot per second in Acres.
	Kharif from	16th January 1892 to 15th October 1892.			
274	143.5	23	120.5	10,612	88
	Rabi from	16th October 1892 to 15th January 1893.			
92	233	47	191	6,699	35

13. The duty of water passing down certain distributaries was obtained for the rabi season by daily gauging. The period of observation was 4 months from 16th October to 15th February and the results are here given:—

Statement showing the Duty of Water.

Number of Distributary, Head-work Sub-division.	Volume of water passed from 16th October 1892 and 15th Febru- ary 1893 = 125 days.	Area ϵ irrigated.	Duty in Acres per cubic foot per second running for 125 days.	DETAILS OF CROPS.					Number of days open.
				Perennial.	Eight- month.	Rabi,		Total.	
						Rs. 3.	Rs. 4.		
	Cubic feet.	A. g.							
Distributary No. 8 " " " " "	18,168,472	231 18	202	37.5	65.50	119	29.5	251	67
" " 13 " " " " "	7,444,081	164 88	232	13.25	21.6	169	21.5	165	47
Baramati Sub-division.									
Distributary No. 22 " " " " "	43,015,372	600 0	133	153.35	79.70	227.30	70.13	368	
" " 28 " " " " "	15,014,138	210 0	143	35.37	71.36	72.37	30.4	103	80
" " 36 " " " " "	58,466,149	890 0	159	157.24	915.39	356.9	60.22	417	76 80

14. Some special observations were made to ascertain the exact area of land that can be irrigated by a given quantity of water in one day of 12 hours. The results are here noted :—

Duty.

Date of observation.	No. of Distributary.	Total discharge during day. Cubic feet.	Flow per second for 12 hours in cubic feet.	Area irrigated. Acres and decimals.	Area per cubic foot per second. Acres and decimals.	Position of Crops.	Last Rainfall.
<i>Head-work Sub-division.</i>							
24th December 1892 ...	13	185,976	43	13-30	3-1	Generally close to distributary.	2nd November 1892.
29th November 1892 ...	13	185,720	3-14	13-22	4-2	Quite close to distributary.	Do.
29th November 1892 ..	8	290,304	6-72	21-40	3-2	Generally close to distributary.	Do.
31st December 1892 ...	8	162,000	3-75	10-90	2-9	Do. ...	Do.
<i>Bardmati Sub-division.</i>							
21st January 1893 ...	22	309,600	7-16	21-65	3-02	Between 2 and 3 miles from head of distributary—sugar-cane only.	Do.
31st January 1893 ...	28	163,008	3-77	9-22	2-45	Various crops—less than 1 mile from head of distributary.	Do.
8th February 1893 ...	36	829,035	19-2	31-37	1-63	Between 2 to 7 miles from head of distributary—various crops.	Do.
The low duty in the last two cases is probably due to the time of year at which the observations were taken, 3 months after the last rain had fallen.							

15. The total area under command was 171,868 acres, and of this 6.5 per cent. was irrigated during the kharif and 4 per cent. during the rabi season.

16. The following table shows the area irrigated in the year from some of the principal distributaries and percentage of irrigation on the net irrigable area commanded :—

Number of Distributary.	Mileage of Main Canal.	AREA IRRIGATED.		Irrigable area under command.	PERCENTAGE OF IRRIGATION TO LAND UNDER COMMAND.	
		Kharif.	Rabi.		Kharif.	Rabi.
		Acres.	Acres.	Acres.		
6	18th mile ...	332	233	3,369	9.85	6.90
8	22nd " ...	236	148	2,400	9.83	6.17
18	34th " ...	882	523	9,703	9.09	5.39
19	34th " ...	113	291	641	17.62	45.39
24	42nd " ...	753	541	14,618	5.15	3.70
28	49th " ...	214	103	583	36.70	17.66
36	64th " ...	895	417	9,694	9.23	4.30
46	75th " ...	489	155	9,335	4.97	1.57
57	90th " ...	588	308	15,931	3.69	1.93
*59	95th " ...	504	433	47,971	1.05	.90

17. The very small area of rabi irrigation is the most remarkable and a very significant feature in this year's operations. The rainfall was certainly excessive in October, but there was none in the latter part of November, nor in December, January and February, and yet the jowari crops matured, and the fodder was so plentiful that practically no *hundi* (fodder crop) was put down in the ensuing hot weather. The results of 1891-92 and 1892-93 show that it is impossible to forecast with any certainty the probable revenue from year to year. The greatest variations take place in areas under jowari, on the failure or success of which depends the necessity or otherwise of the hot weather *hundi*, and in bajri (monsoon dry). Gram was stable; wheat increased by 262 acres, and ground-nut by 460 acres. The most notable increase was in sugarcane with an addition of 924 acres (nearly 130 per cent. over last year's totals). This crop is

* Not yet completed.

being extensively cultivated now near Vadgaon and Bārāmāti and other villages. The produce is exported from the valley by means of the Southern Marātha Railway *vid* the Nirā Station, to which it is carried in carts from as far as Bārāmāti, over the very bad road now existing. Vadgaon, 14 miles from the Nirā Station, is becoming an important centre, and there is little doubt that, if a feeder road were made for even this distance only, it would materially help to encourage further enterprise and open out the valley to men with capital.

(2).—MHASVAD TANK.

Rainfall over the irrigated area.

The rainfall for the year under report gauged at 2 stations on the line of canals was 34.11 inches (kharif 22.17, rabi 11.94). The previous year's was 13.71 inches (kharif 10.74, rabi 2.97). The rainfall was seasonable as well as plentiful.

2. The area irrigated during the year was 4,997 acres, of which 3,561 were kharif and 1,436 were rabi crops. The area applied for was 4,454 acres (3,114 kharif and 1,340 rabi), or 543 acres less. The cause is as explained in the case of the Ekruk Tank.

There has been no free grant of water and no increase in rates; and the assessment on account of water-rates amounted to Rs. 19,997. The gross assessed revenue from all sources being Rs. 20,613 and the net revenue Rs. 5,492 (20,613—15,121 working expenses).

Comparison with irrigation of previous years.

3. The following statement gives a comparison with previous years since the opening of the canals :—

Years.		Kharif.	Rabi.	Total.	Water-rates assessed.
		Acres.	Acres.	Acres.	Rs.
1886-87	...	617	727	1,344	1,030
1887-88	...	1,717	2,144	3,861	5,897
1888-89	...	2,965	3,139	6,104	12,733
1889-90	...	4,074	2,718	6,792	14,969
1890-91	...	4,081	3,025	7,106	13,541
1891-92	...	3,544	4,760	8,304	25,457
1892-93	...	3,561	1,436	4,997	19,997

4. The decrease is on last year's only and is entirely in the rabi. The seasonal rainfall is as usual the cause, and this is accentuated by the quality of the land under command. The latter is for the most part poor, and kharif crops, therefore, are principally raised. On a year with a good monsoon the total area of rabi crops is actually less than on a year of scanty rainfall; because bājri is everywhere cultivated in the former case and a rabi crop could not possibly be grown afterwards on the same land. Where, on the other hand, the land is rich enough to grow rabi crops, there is an increase in the total rabi grown on good years, so far as the rotation of crops permits. It follows, therefore, that where such rich land is under command of a canal system, there is on a good year a larger area of crops of which a percentage may possibly require extra water; and this tends to lessen the diminution in irrigation caused by the percentage itself being diminished. Again, considering a year with a bad monsoon on these poor lands, as a bājri crop could not be raised, a rabi crop is attempted in the hopes of autumn rains rather than have no crops at all. There is very little depth of soil over the muram, and the cultivators are soon reduced to apply for aid from the canal water. We see then very good reasons why on this poor land the area of rabi irrigated in a good year should be specially limited and in a bad year specially increased as compared with the area irrigated on canal systems commanding richer lands. And hence the rather large falling off in this year of a good monsoon is fully accounted for.

5. The rainfall over the 480 square miles catchment area was gauged in 5 places and averaged 25·30 inches between the 1st June and 31st October. The lowest R. L. of the water in the tank was 1,924·55 or 8·85 feet above the canal sluices on the 26th May. The rains then commenced. On the 5th July the waste weir (R.L. 1,938·40 or 22·70 feet above sluice) began to flow. Allowing for the canal discharge and omitting only the evaporation and absorption over the tank area, this represents a run-off the catchment area of 0·208, the rainfall during this period, *i.e.*, 26th May to 5th July 1892, the average of 5 stations, being 8·19 inches. The tank continued to be well replenished and was at this level, *i.e.*, the full supply, on the 13th November 1892. On the 20th January 1893 certain percolations through the dam were discovered and it was considered necessary to lower the water level somewhat by a cut in the waste weir down to R. L. 1,931·64 and by allowing a maximum discharge from the sluices; so that the height above the canal sluice was 14·65 feet on 31st March. This proved ample for the kharif crops till the present rains commenced. There was, therefore, an abundant water-supply.

Canal discharge.

6. The following shows the average monthly discharge of the canal at the head :—

For Irrigation only.

April	1892	...	31·02	Cubic feet per second.
May	"	...	31·14	"
June	"	...	22·91	"
July	"	...	41·48	"
August	"	...	42·66	"
September	"	...	28·36	"
October	"	...	46·76	"
November	"	...	31·54	"
December	"	...	73·97	"
January	1893	...	43·68	"

To waste.

February	"	...	*For 26 days.. 49·62+78·19	} Run to waste in order to lower tank level— <i>vide</i> para. 5.
March	"	...	For whole month. 48·61+43·33	

7. The rainfall being unusually good, the experiments on the duty of the canal water were discontinued, as the results would only have been misleading for individual crops. The total duty, however, for the season, considering the discharge utilized on the total area, is not so much affected by the character of the rainfall; because while the quantity of the canal water required by the irrigated crops must on the whole be less in a season of good rainfall, there is far more waste than on a year of scanty rainfall. In the latter case there are large demands on the canal water, and the cultivators are careful as well as the canal establishment to prevent waste; and more than this, the crops are often insufficiently irrigated. The results obtained from the discharge at head are given as usual in Statement I—E; but presuming

Results obtained from the prescribed Form I—E. are incorrect.

that the discharge is all utilised for irrigation and all waste at tail, &c., strictly gauged, still the figures obtained must always be deceptive from the very method by which they are calculated. The duty for kharif crops is obtained by dividing the area of kharif by the average discharge for what is called the kharif season; similarly for rabi crops. But perennial and 8 months crops are irrigated during the rabi season as well. Thus the duty for kharif crops is shown much too high and rabi too low. For instance the duty this year for kharif crops is shown in Statement I—E. to be 101·95 and for rabi 27·08. Here 1,951 acres out of 3,561 acres of kharif crops have been irrigated during the rabi season also. If for the purposes of comparison the rabi area be also increased by this 1,951 acres, the duty for the rabi season will now be 63·87. Again, it should be noted that there is another cause for the kharif duty always appearing better than the rabi. The kharif season is spread over some eight months during which hot weather and monsoon dry-crops are grown almost entirely at separate times, *i.e.* the water is not being used for both at one and the same time, though that is what is assumed! It appears, therefore, that the mode of ascertaining the duty requires alteration.

* On 3rd February, discharge to waste was commenced.

8. The working expenses, including indirect charges, amounted to Rs. 15,121. The item 'Maintenance and Repairs.' Working expenses. (ordinary) amounted only to Rs. 6,260, of which Rs. 777 were on account of the dam. Special repairs to the dam, in connection with the percolation mentioned at end of paragraph 5, amounted to Rs. 436.

The length of main canal and branches is 60 miles and of Government distributaries 34, or 94 miles in operation. Thus the expenditure on the canals, which amounted to Rs. 5,483, represents only Rs. 58 per mile.

9. It is satisfactory to note that the amount required for repairs and work establishment on Canal No. 2 and branches will always be small, and will, if anything, decrease as years go on. Satisfactory prospects as regards maintenance charges. This is because the canals have, in the first instance, been well aligned, cross-drainage fully provided for with masonry works of first class quality, and all embankments, where passing through broken muram land, (of which there is a large proportion) rendered water-tight with clay hearting. Advantage has been taken of the hardness of the ground to give good velocities. There will be absolutely no expenditure on weed clearance. Nor will there be the hindrance to irrigation which this clearance engenders from frequent canal closure. The branch canals and distributaries run for the most part on the tops of the ridges with high velocities, and the irrigable lands are thus easily commanded with the least possible outlay. The chief irrigation is on this portion of the canal and it should rapidly increase.

10. The reasons for the falling off in irrigation this year are sufficiently explained in paragraph 4. There is no need for anxiety Satisfactory Revenue prospects. on this account. Every year now will see an increase in those crops which must always form the stable element in the revenue from irrigation in the Deccan, *viz.*, perennial and 8 months crops. It is most satisfactory to be able to report that no less than 22 miles of distributaries have been constructed in the last few years at the wish and expense of the villages concerned. It is the best evidence of a desire to take advantage of the canal water, and a good omen. In the year under report such a distributary was constructed by the village of Dahivadi, 3 miles in length, costing Rs. 700, including a road bridge, and capable of discharging some 5 cubic feet per second. These distributaries are constructed by cultivators desirous of growing perennial and 8 months crops. For these we have an unfailing supply from the Mhasvad Tank. The land, as has been stated, is for the most part poor; but there is a small proportion of richer land, sufficient at least for the perennial crops, and quite as much as there will be manure available for in the several villages. The principal 8 months crop is ground-nut, and this is rapidly becoming more popular owing to the enormous profits made by its cultivation. It grows too in this poor 'mál' land, and what is very remarkable, fairly well without manure. The area irrigated during the year under report is 1,388 acres, while up to July of the present year no less than 2,000 acres are being irrigated. (This, too, in spite of plentiful rainfall up to date). Generally speaking, the cultivators are learning the advantages of irrigation, and as the water-supply is a certain one and can be distributed economically, the revenue prospects are in every way hopeful.

11. The area irrigated was measured at a cost of Rs. 1,392, or Re. 0-4-6 per acre. Some changes in the system of measurement and its supervision are being introduced, by which it is hoped to reduce the expenditure under this head. Cost of measurement of irrigation.

12. One cause of the rapid increase of revenue on these canals is that the branch canals and some of the principal distributaries have been constructed. There should now be no delay in completing the remaining distributaries. It is by their means only that the greater and best portion of the land is commanded. The policy with the average Deccan canal should be to complete the tail, branches and distributaries as soon as possible. For no revenue, to speak of, can be expected until the canal has General remarks.

climbed up to a commanding level, when full advantage of the position gained must be taken by constructing the distributaries. The cost of the storage of the water-supply and provision for its conduct to the position of command is measured by lakhs of rupees, and that of the distributaries is by hundreds only; while a fair return on the outlay can only be expected when the water-supply provided is distributed. The small means of the ordinary Deccan cultivators and their ignorance of irrigation, are against leaving it for the cultivators to carry out. The instance above quoted, paragraph 10, of private distributaries being made, is most unusual and the owners are already requesting that Government should take over these distributaries and improve them. The demands on them are becoming more than can be met by these ill-constructed and insufficient channels. The supply in the Mhasvad Tank is plentiful, and though on a famine year the supply would of course be insufficient for all the land commanded, it is the ordinary years that must be studied in forming an estimate of, and provision for, revenue. As has already been mentioned, paragraph 10, the perennial and 8 months crops are the stable element in the employment of irrigation, and these crops are grown here on scattered areas which can only be reached by distributaries, and the latter can be constructed cheaply while the water-supply for them is ample. The peculiar features of the country, too, demand the construction of the distributaries. Bare ridges, upon which nothing can be grown but the poorest bájri crops, slope down rapidly to the more fertile valleys. On the main valley lies the best soil and the village, and here the perennial crops will be cultivated.

PRODUCTIVE PUBLIC WORKS.

(5).—HÁTHMATI CANAL.

The rainfall for the year under report was 44·60 inches in the kharif and 0·10 inches in the rabi season against 22·46 and 0·22 inches respectively, the previous year, the average of the last five years being as follows:—

				In.	cts.
Kharif	...	...	...	...	21 26
Rabi	...	...	...	...	0 99

2. The areas irrigated during the last year and the year under report were as follows:—

				Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.
1891-92	...	...	...	1,367	1,349	2,716
1892-93	...	...	...	387	2,341	2,728

Assessments.

3. The assessments were as follows:—

				Kharif.	Rabi.	Total.
				Rs.	Rs.	Rs.
1891-92	...	...	...	4,074	2,641	6,715
1892-93	...	...	...	1,126	4,698	5,824

4. The total area under irrigation during the year shows a slight increase over the previous year, but there was a considerable falling off in the area cultivated during the kharif season, and this is to be accounted for by the fact that the rainfall being very late and at its commencement exceedingly scanty, the cultivators anticipating that there would be an insufficient monsoon feared to plant rice and fell back on other crops such as bájri and jowári. Their action was further determined by the very scanty supply of water in the canal (up to the middle of July) which rendered it impossible to supply them with the water they urgently needed for the work of transplantation of young rice. This diminution in the kharif areas was, however, compensated to some extent by the increased area cultivated in the rabi season, which owing to the heavy and late rainfall, and to the fact that in consequence abundant water was available in the canal to meet all demands, was a very good one. The decrease in the total assessment was due to the decrease in the kharif area, which could not be recouped by the increase in rabi irrigation on account of the lower rates levied on the latter.

(6).—LOWER PANJHRA RIVER WORKS.

9

Remissions.

5. Remissions to the extent of Rs. 32 were granted, of which Rs. 8 were on account of free grants.

6. The areas applied for and irrigated were as under :—

					Kharif.	Rabi.
Applied for	...	...	...	...	424	2,119
Irrigated	...	...	...	...	387	2,341

The difference in kharif areas was due to the failure of canal water and in the case of rabi areas to the causes given in last year's report.

7. The miscellaneous revenue realized during the year amounted to Rs. 1,146 against Rs. 1,120 the previous year.

8. The areas irrigated were measured by the ordinary establishment employed on the canal (charged to Revenue Establishment) at a total cost of Rs. 122, or nearly 9 pies per acre irrigated, as compared with 1 anna and 2 pies per acre of the previous year.

9. The average water-rate per acre irrigated during the year was Rs. 2.13 as compared with Rs. 2.47 of the previous year. The decrease was owing to the kharif areas being so much less than the rabi areas for which the rates are lower.

Working Expenses.

10. The expenses of the year as compared with those of the previous year were as follows :—

Year.	Extensions and Improvements.	Maintenance and Repairs.	Establishment including Indirect Charges.	Tools and Plant.	Total.
1891-92...	...	4,508	1,945	42	6,495
1892-93...	...	4,044	1,503	12	5,559

The rate per acre irrigated was Rs. 2.04 for the year under review against Rs. 2.39 the previous year. The average amount spent on silt clearance was Rs. 548 from the commencement, while the length of the canal and distributaries is 51 miles, which gives a rate of about Rs. 10.74 per mile.

11. No reliable data can be given regarding the duty of water. The canal has been gauged for a series of years and the result shows that at least 50 per cent is lost by absorption and evaporation in the first 10 miles where there is practically no irrigation. The average discharge as gauged at the head during the last kharif season was 66 cubic feet per second, while the irrigated areas were 387 acres. This gives a duty of only 5.86 acres per cubic foot, but as nearly 50 per cent. is lost in the first 10 miles, the real duty for the kharif season is about 12 acres per cubic foot of discharge against 46 of the previous year, the falling off being of course due to the causes noted in paragraph 4. In the rabi season the average discharge at the head for the year under report was 88 cubic feet per second, and the area irrigated 2,341 acres, and allowing the same percentage for loss by absorption, the result gives about 53.20 acres per cubic foot, as against 61 acres for the previous year.

(6).—LOWER PANJHRA RIVER WORKS.

1. The works have been in operation for 21 years.

2. The irrigation in the system is from the river Panjhra supplemented by the Mukti Tank Storage when the river-supply is deficient. During the year under report it had to be supplemented from the tank storage throughout the hot weather, when perennial and hot weather crops, both in the 'kayam bagait' and new and dry-crop lands, were being irrigated. In the kharif and rabi seasons of the year the river supply by itself was sufficient to meet all requirements.

3. The storage in the tank at the commencement of the year was 179.28 millions cubic feet, which after serving the requirements of irrigation went down to 100.38 millions cubic feet at the close of the hot weather, and before the tank

received its first replenishment on 3rd June 1892. On 18th September 1892, the tank filled to overflowing, and was not again drawn upon for irrigation.

4. The irrigation under the tank during the year has been :—

					Kharif.	Rabi.	Total.
					Acres.	Acres.	Acres.
Mámul Bágáyat	...	...	...	...	1,370	445	1,715
Jiráyat land	...	...	...	...	298	604	902
Total							2,617

The mámul bágáyat is fixed under the settlement, and practised in 8 villages; the jiráyat irrigation was in 17 villages, and varied according to the inclination and means of the irrigators as well as the nature of rainfall of the year.

5. The rainfall from 1st April 1892 to 31st March 1893 amounted to 26·56 inches against 22·54 inches of the previous year, and 23·11 inches, the average of the past 18 years. This rainfall compares by seasons with the fall of the previous year as below :—

					1891-92.	1892-93.
					Inches.	Inches.
Kharif...	...	...	...	...	22·08	24·74
Rabi	...	...	...	...	0·51	0·47
Total					22·54	25·21

Notwithstanding this increase in rainfall, there has been on the whole a slight increase in the irrigation of dry-crop lands during the year. The irrigation taken separately by seasons shows that there has been a decrease of 190 acres in the kharif season, but an increase of 204 acres in the rabi season. The increase in the rabi season is due to the revival of irrigation at Mahadi in Dhulia Taluka, which had ceased while a bandhára was being built for that village. This work was completed 2 years ago, but the irrigators asked for the improvement of their channel also. Their request could not be complied with, until the revenue prospects from the expenditure already incurred became hopeful to some extent at least. The villagers, on seeing that Government will not spend any more money on their channel until they resumed the irrigation, have recommenced it, and 213 acres of land were irrigated in the rabi season of the year under report.

6. The following table contrasts the year's irrigation in dry-crop land with that of the previous year, according to the classification of crops by water-rates levied :—

					Kharif.		Rabi.		Total.	
					1891-92.	1892-93.	1891-92.	1892-93.	1891-92.	1892-93.
1. Perennial	...	...	...	...	106	122	2	1	108	123
2. Eight months	...	...	...	...	343	140	4	1	347	141
3. Four months	...	...	...	...	2	...	392	602	394	602
4. Monsoon	...	...	...	...	10	15	...	...	10	15
5. Hot weather	...	...	...	...	27	21	...	...	27	21
Waste of water	...	...	...	...	...	...	2	...	2	...
Total					488	298	400	604	888	902

In the kharif irrigation the large decrease is in the area of 8 months crops, which is due to favourable monsoon rain. The increase in four months crops in rabi irrigation is entirely due to the revival of irrigation at Mohadi.

7. The "Káyam Bágáyat" land is assessed at a consolidated rate for land and water revenue combined, fixed under the survey settlement of 1868-69, plus the enhancement of water share due to the assured water supply from the Mukti Tank. The enhanced water-rates are not however levied on the inám lands in the villages which had mámul bágáyat, as the inámdárs contended that their lands did not require the Mukti Tank water. Among these inám lands comes the entire village of Kaothal, which has an irrigation channel of its own. This channel derives benefit from the Mukti Tank, and it has been proposed to prove this to the satisfaction of the inámdár by actual observations. The inámdár, however, declines to reopen the question. The subject is under consideration in the Revenue Department. 59 acres plantain crops, valued at Rs. 1,500, were irrigated in the Kaothal "thal" during the year. All this plantain irrigation derived benefit from the Mukti Tank supply, as the natural supply of the river proved insufficient to meet the requirements of irrigation in the whole of the Lower Pánjhra system in the beginning of the year. Had it not been for the tank supply, these crops would have greatly suffered for want of water.

8. In the case of lands in villages in which the revision survey settlement rates have been introduced, the enhanced water-rates have merged into the revised consolidated rate. The irrigated lands at Mudhi and Mandal in Amalner taluka are affected by this revision survey settlement.

9. The area of old irrigation during the year was 1,715 acres, which may be classified as under :—

	Acres.
I.—Area paying the consolidated rate under the old survey settlement of 1868-69 and enhanced water-rate	1,124
II.—Area of inám land exempted from paying the enhanced water-rates... ..	229
III.—Area paying the revision survey settlement consolidated rates	362
Total	1,715

10. The question of degradation of bágáyat land into jiráyat at the last revision survey of Mudhi and Mandal still remains unsettled, pending a report by the Survey and Settlement Commissioner.

11. The assessments of the year amount to Rs. 16,237 made up as follows :—

A.—On old irrigation or Mámul Bágáyat land.

	Rs.
I.—Enhanced water-rates	5,896
II.—Irrigation share of land revenue under the old settlement	3,672
III.—Irrigation under revision survey settlement .	2,971

B.—New or dry-crop land irrigation.

IV.—Water-rates	3,063
G.—Miscellaneous	635
Total	16,237

12. The average water-rate per acre paid is—

	Rs. a. p.
Old irrigation	7 4 11
New irrigation	3 6 4

The rate on new irrigation is slightly less than last year's, owing to diminution in eight months and hot weather irrigation. The increase in the perennial crops has not helped in keeping up last year's rate, as part of the perennial irrigation was assessed at half rate.

13. There were no remissions during the year.

14. The realizations amount to—

	Rs.
I.—Enhanced water-rates on old "thal" lands ..	5,896
II.—Irrigation share of land revenue under the old and new settlement	6,643
III.—Water-rates on new land	2,995
IV.—Miscellaneous	632
Total ...	16,166

15. The outstandings at the close of the year amount to—

	Rs.
I.—Enhanced water-rates	...
II.—Water-rates on new land	191
Total ...	191

16. The area of new land applied for during the year was—

	Acres.
In kharif season	254
And in rabi season	537
Total ...	791

And the area actually assessed was—

In kharif season... ..	298
And in rabi season	604
Total ...	902

The actual irrigation being in excess of the area applied for is due to some of the irrigation of dry-crop lands at Mudhi, Mandal and other "kāyam" bāgāyat villages being carried on without applications for water. The mixture of bāgāyat and jirāyat land in one and the same survey number, without any marks on the ground to distinguish the bāgāyat from the jirāyat portion, makes it impossible for the holder to know whether he is watering the bāgāyat or jirāyat portion, and consequently no water applications are submitted for such fields. The Irrigation Department has, for levying Mukti Tank water-rates, to measure all the land irrigated in a field and to deduct the bāgāyat area fixed under the revision survey settlement and levy water-rates on the remaining area. This area does not find place in the irrigation operation statements, in which the areas applied for are reported. It only comes under actual irrigation, when measurements are made for the purposes of assessments. No penal rates are levied on such area irrigated without regular water applications.

17. The cost of measurements of irrigated crops during the year was Rs. 43-4-3, calculated upon the time of the canal establishment actually spent on this work. No separate measurer was employed. This gives a rate of 9 pies per acre against 1 anna per acre last year.

18. The working expenses amount to Rs. 9,567 against Rs. 12,290 of previous year. Deducting these working expenses from the total assessments of the year (*vide* para. 11 above) the net revenue earned is Rs. 6,670, which represents

a return of 1·53 per cent. on the direct Capital outlay to the end of the year, which was Rs. 4,37,181.

19. Special experiments were made during the year to find out the duty of water in the rabi season. A record was kept of the water actually given to wheat and pea crops in survey Nos. 89 and 158, respectively, in the village of Nahalod. The results are given below :—

Village.	Survey No.	Crops irrigated.	Area irrigated.	Number of waterings given.	Total quantity of water used.	Quantity of water used per Acre.	Duty of water in acres per cubic foot of discharge running during the rabi season of 4 months (123 days).	Remarks
			A. g.		[C. ft.	C. ft.		
Nahalod	89	Pea ...	1 19	2	27,564	18,688	569	
	158	Wheat .	0 26	2	16,582	25,511	417	

(7).—KADVA RIVER SYSTEM.

The works comprised in this system have been described in detail in previous reports, and are as under :—

I. *Wághad Tank* has been for eight years in partial operation, the present storage being fully one-third the sanctioned capacity. The embankment is nearly completed and the waste weir and channel alone remain incomplete. A temporary earthen dam was thrown across the waste channel at the end of the monsoon, by which the water was raised to R. L. 114·39 feet, or to within 13·61 feet of proposed full supply level. This was 1·39 feet more than in 1891.

II. *Pálkhed Canal*.—A new work in operation since 1873-74. The tail portion of the main distributary, 6·63 miles long, including minor branches, are not yet constructed and need not be begun till the Wághad Tank is brought more fully into operation.

III. *Ojhar Tãmbat Canal*.—An old native work improved in 1874-75. The canal has been extended and is in operation for a length of $4\frac{1}{2}$ miles, of which $2\frac{1}{2}$ are new and a further extension of $3\frac{1}{2}$ miles remains for execution. Further extension is deferred, as per No. II above.

IV. *Waddáli Canal*.—An old native work improved in 1869 and practically completed.

2. The tank was overflowing through the waste channel for 75 days, showing that the run-off easily fills the tank.

The natural supply in the river was sufficient for all cultivation during the rains and up to the middle of February 1893. The river supply was supplemented from the tank from 1st April to 3rd June 1893 during hot weather, and again from 21st February to 31st March 1893.

3. The total draw-off from the tank during the above two periods was 126 millions cubic feet, of which 105 millions cubic feet were measured as passed through outlet and $4\frac{1}{4}$ millions cubic feet as leakage (used on the Pálkhed Canal), and the remaining $16\frac{3}{4}$ millions cubic feet were lost by evaporation and absorption, making the loss during the first period from 1st April to 3rd June 1892 of 64 days, equal to 0·93 feet in depth on the average surface, and during the second period from 21st February to end of March of 39 days, equal to ·43 feet in depth on the average surface.

4. The expenditure on Capital Account during the year was Rs. 208 for alterations of an aqueduct on Ojhar Tãmbat Canal. When Government took over

this old canal with a view to improve it, an aqueduct in 1st mile was causing a great obstruction to the free flow of the increased supply of water passing down the canal. The original errors of level have been rectified during the year and it is now able to pass the full volume of water which can be admitted into the canal.

5. The mean rainfall during the kharif and rabi seasons, as gauged at two stations, *viz.*, Pálkhed at canal head and Niphád near the tail, was 33·02 inches, being 81 per cent. more than the average (25·22) of the previous 19 years. The rainfall is shown below:—

Stations.					Kharif.	Rabi.	Total.	Average.
Pálkhed	...	...	...	...	26·02	2·87	28·89	} 33·02
Niphád	...	...	...	...	34·25	2·90	37·15	

6. The area irrigated during the year under the (three) canals was 2,825 acres as compared with 2,453 acres applied for. The difference between applications and actuals is due to inability of the cultivators to estimate correctly.

7. The following table shows (1) the area irrigated and assessment of each canal during the year, and (2) similar average figures of the previous four years:—

1892-93.

Canals.				AREAS.			ASSESSMENT.		
				Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pálkhed Canal	...	...	...	463	1,496	1,959	2,892	3,980	6,872
Wadáli Canal	...	...	...	45	338	383	235	1,022	1,257
Ojhar Támbat Canal	...	...	...	98	385	483	536	945	1,481
Total	..			606	2,219	2,825	3,663	5,947	9,610

Average of four years 1888 to 1892.

Canals.				AREAS.			ASSESSMENT.		
				Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Pálkhed Canal	...	...	...	929	1,136	2,065	4,507	2,582	7,089
Wadáli Canal	...	...	...	155	213	368	542	431	973
Ojhar Támbat Canal	...	...	...	148	115	263	625	247	872
Total	...			1,232	1,464	2,696	5,674	3,260	8,934

In addition to the areas shown above, 326 acres under the Wadáli Canal were assessed as irrigated under "Mámul Bágáyat" the annual irrigation share for which amounts to Rs. 2,241, giving an average water (assessed) rate of Rs. 6-14-0 per acre:—

Statement of water assessment per cubic foot per second.

Canals.	AT HEAD.		UTILIZED.	
	Kharif.	Rabi.	Kharif.	Rabi.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Palkhed Canal	246 8 9	233 4 8	432 14 11	370 3 9
Wadali Canal	140 11 5	297 1 6	242 4 3	496 1 10
Ojhar Tāmbat Canal	258 14 11	288 1 9	520 6 2	410 13 11

Note.—The revenue derived per cubic foot per second is not very large. This is due to much of the land irrigated consisting of small patches more or less isolated from each other.

8. The total area irrigated in 1892-93 is 5 per cent. less than that of the previous year and 5 per cent. more than the average of the previous four years. The decrease over the area irrigated in 1891-92 in the kharif season on the Palkhed and Wadali Canals was, 133 and 134 acres, chiefly due to a larger area than usual of eight months crops being classed as rabi owing to their requiring water in that season, also partly to a very small area of monsoon dry-crops irrigated owing to favourable and timely rainfall. The great decrease, when comparison is made with the results of the previous four years, tends to show that kharif irrigation of dry-crops is becoming more unpopular, for its present area is less than half of the average of preceding four years. There was a slight increase (22 acres) on the Ojhar Tāmbat Canal.

There has been a decrease in rabi cultivation on Palkhed Canal compared with 1891-92 of 231 acres, but compared with the preceding four years the increase is 360 acres.

On the Wadali Canal the increase of rabi over the preceding year is 120 acres and on the preceding four years is 125 acres. This is due to the stoppage of leaks and waste along the first mile of the canal.

On the Ojhar Tāmbat Canal the increase on the preceding year is 210 acres and on the previous four years 270. This is due to special silt clearance to its feeder the Palkhed Canal allowing more water to reach its head-works. As the Wadali and Ojhar Tāmbat Canals irrigate land near the G. I. P. Railway, the demand for water is likely to continue to increase.

9. The principal crops for the year are shown below, with average figures for the five preceding years:—

Names of crops.				For the year 1892-93.	Average of the five preceding years.	Increase.	Decrease.
				Acres.	Acres.	Acres.	Acres.
Wheat...	...	...	...	1,214	660	554	...
Ground-nut	...	...	...	730	653	77	...
Gram	...	...	...	165	159	6	...
Sugarcane	...	...	...	253	293	...	40

10. The increase in wheat and ground-nuts is especially satisfactory as showing that the cultivation of these more valuable crops is becoming popular.

11. The total maintenance charges on the three canals during the year amounted to Rs. 8,214 divided as follows:—

	Rs.
I.—Maintenance and Repairs	3,862
II.—Establishment	3,330
III.—Tools and Plant	95
IV.—Share of collection charges	461
V.—Indirect charges	466
Total	8,214



A reduction has, therefore, been effected of Rs. 216 during the year, due to the overseer in charge having also been employed on other work which relieved the head establishment.

12. The total assessment and the amount realized during the year are accounted for as under:—

		Rs.	a.	p.
The assessment during the year was	...	10,029	0	0
The unrealized rabi assessment for 1891-92	...	5,671	3	0
And the unrealized balance from previous years	...	909	11	5
was	...	36	2	0
Do.	Miscellaneous receipts	...	...	...
		16,646	0	5
<i>Deduct</i> —				
Total realizations during the year...	...	9,612	0	0
Balance unrealized	...	7,034	0	5

The above figures include direct receipts, as noted below, except Rs. 594 for enhancement of land assessment:—

		Rs.
(1) Plantation and other canal produce	...	357
(2) Rent of buildings	...	35
(3) Alluvial Gálper land	...	28
Total	...	420

13. The total cost of crop measurement, &c., is given as below:—

Names of Canals.	Area measured.	Total Cost of measurement.
	Acres.	Rs.
Pálkhed Canal	1,959	141
Wadálí Canal	383	29
Ojhar Támbat Canal	483	36

or one anna and two pies per acre irrigated.

14. *The duty of water* on the canals varied from 30 to 50 acres during the kharif season. Special observations for ascertaining the quantity of water required to mature different crops have not been made in consequence of sufficient rains during the months of September and October. Only very few waterings have been needed for the eight months and rabi crops.

15. *Leakage experiments.*—No experiments were made during the year.

16. *Canal closures.*—There were 8 closures in all during the year for silt and aquatic plants clearance. Of these 6 were on the Pálkhed Canal and 2 on the Wadálí Canal, aggregating 29 and 9 days respectively.

17. The total number of trees standing on the canals at the close of the year was 11,970: of these the principal were as under:—

Names of Trees.	Number of Trees.	Remarks.
Bábul	9,498	
Mango	804	
Nimb	496	
Moho	633	

The expenditure during the year was Rs. 220 from Revenue Account. The total expenditure to date is Rs. 3,746.

(8) PRAVARA RIVER WORKS—LA'KH CANAL.

1. The area irrigated was 66 acres of kharif and 92 acres of rabi, or a total of 158 acres. The total shows a decrease of 350 acres on the area of the last year, which was due to timely and favourable rainfall.

Comparison of area applied for and irrigated.

2. The following statement compares the area applied for and irrigated during the year:—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	A. acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1892-93 ...	107	66	121	92	228	158	41	29	70

The difference is due to timely and favourable rainfall falling in both the seasons after the applications had been sent in.

The area applied for, but not irrigated, is 44 per cent. of the area irrigated.

3. During the year the water-rate assessments, excluding remissions, amounted to Rs. 532, detailed as below:—

	Rs.
Kharif ...	350
Rabi ...	182

The total amount of the assessment in the last year was Rs. 1,508; there is, therefore, a decrease of Rs. 976 or 65 per cent.

4. Remissions amounting to Rs. 16 from the kharif season were granted during the year on account of short supply of water in the hot weather.

5. The incidence of water-rate per acre was Rs. 3.37 against 2.97 in the previous year, the increase being due to the greater proportional decrease in the area of low rated crops.

Capital Account.

6. There was no capital expenditure during the year.

Working expenses.

7. The working expenses of the year were as follows:—

	Rs.
Maintenance and Repairs ...	1,313
Share of Establishment ...	1,347
Tools and Plant ...	67
Share of collection charges ...	40
Indirect charges ...	159
Total ...	2,956

The working expenses of the last year amounted to Rs. 3,054. The rate of working expenses this year per mile of Main Canal open is Rs. 129 and per acre irrigated is Rs. 18.71.

8. The duty per cubic foot per second of water admitted into the canal was 2.66 acres in the kharif and 4.31 acres in the rabi season. That of water actually utilized was 3.30 acres in the kharif and 6.06 acres in the rabi season.

Water-rates.

9. The water-rates are the same as those in force since 1889-90 when the old rates were re-established.

10. The total cost of measuring 158 acres during the year was Rs. 31, or 3 annas and 1 pie per acre against Rs. 56, or 1 anna and 9 pies per acre last year. The rate is calculated upon the actual time of the measurer spent on measurements. The high rate is due to the area of the fields irrigated being small and scattered along the canal at a distance from each other.

11. The rainfall during the year as gauged at Malunja was kharif 26·69, rabi 5·34, total 32·03 inches, or 11·78 inches above the average of the last five years.

12. The discharge of the river was not sufficient in the hot weather. The discharge taken at Bráhmangaon above weir on 15th March 1892 was 0·81 cubic feet per second and was not sufficient for the small area of perennial crops under irrigation. The supply ultimately failed on 13th April and the canal was dry for 15 days, i.e., up to 27th April; a small flood came down on 28th April when the river discharge was 21·37 cubic feet. This fell to 1·14 cubic feet on 17th May and the canal was again dry for 7 days. On 27th May a large flood occurred. During the monsoon and cold weather the river supply was ample. In January 1893 a temporary earthen bund, 2 feet high, was thrown on the weir as usual to increase the back-water during the hot weather.

13. At the end of the year the number of trees on this canal was 17,971. The number of principal kinds were:—

Bábul ...	12,163	Mango ...	617
Nimbharsa...	64	Jambul ...	943
Nimb ...	2,277	Bore ...	501
Bakan ...	74	Divi Divi ...	19
Tamarind ...	38	Bámbu ...	282
Melingtonia ...	27	Sandal ...	19
Moho ...	3	Siris ...	14
Miscellaneous trees ...	930		

The total number last year was 17,935, showing a small decrease.

14. Credit on account of the revenue derived from Galper land formed by deposit of silt above the weir is to be given to the canal from the year 1882-83 as per Government Resolution, Revenue Department, No. 923, dated 2nd February 1893.

9.—MUTHA CANALS.

1. The maximum natural flood in Lake Fife during the year occurred on 19th July 1892, on which date water rose to a height of 3·75 feet above the finished or permanent crest of the waste weir, and at this level the water surface was within 7·25 feet of the top of the dam.

The discharge was estimated at 32,163 cubic feet per second, or equal to a run off of nearly 0·26 inches per hour. This flood level is 1·25 feet lower than the estimated maximum flood and 1·05 feet lower than the flood of 7th July 1882, which was the highest yet recorded.

On the 1st April 1892 the level of water in the lake was 13·37 feet above the sills of the canal sluices, the minimum level was reached on 3rd June when the depth of water was 6·55 feet above the same level and remained about this level till the 3rd July, an unusually long period for this low level. From this date the water began to rise gradually till the 8th and rapidly from 9th July and flowed over the waste weir on 11th idem. The overflow was continuous from that date until the standards and planks were fixed for the purpose of increasing the storage, viz., towards the end of October. The maximum height stored by these means was $4\frac{1}{2}$ feet above the lowest portion of the crest of the weir, representing an extra storage of about 650 millions of cubic feet.

Assessments of Revenue. 2. During the year under review the assessments amounted to Rs. 2,08,320, detailed as follows:—

	Rs.
Water-rates	96,431
Sales of water	1,972
Water supply of towns	97,178
Plantation and other canal produce	2,765
Water-power... ..	6,000
Rents of buildings	217
Miscellaneous	3,715
Irrigation share on account of enhanced revenue from percolation from the Mutha Canals in the villages of Warza, Shiveni and Kondve Dhawdi, Taluka Haveli, as per Canal Return No. VIII...	42
	208,320

The cause of the falling off in revenue is chiefly due to the fact that the supply of water in the previous year was deficient and necessitated the area of new sugarcane, applications for which were received after 15th January 1892, being restricted to that for which the balance of water at that period was sufficient. The deficiency of water was caused by the failure of the late rabi rains, which resulted in the draw off from the Lake Fife storage being commenced at a much earlier date than usual. The decrease in revenue is also due to the fact that the rainfall of the year under review was exceptionally heavy and favourably distributed and resulted in a great reduction in irrigation of the monsoon kharif and the rabi crops.

3. The area irrigated during the year was 6,797 acres, of which 4,919 were kharif and 1,878 rabi crops. The total shows a decrease of 7,264 acres or 52 per cent. as compared with the area irrigated in the previous year. The reason for the decrease has been given in paragraph *ante*.

4. The revenue derived from water-supply of towns amounted to Rs. 97,178, showing a decrease of Rs. 3,549 on that of the previous year. 303,989,025 gallons of water were supplied from the canal for the Poona city water-supply at a charge of Rs. 15,670; Rs. 10,000 of this sum being the fixed charge leviable for any quantity taken, not exceeding 750,000 gallons a day, and the remainder Rs. 5,670 for water taken in excess of that amount at the rate of 3 annas per 1,000 gallons. Out of the total decrease of Rs. 3,549, Rs. 341 is due to diminished supply to the city and the balance to the cantonment. The heavy rain between June and November was the cause of the reduction in requirements for gardens, &c.

5. The average daily consumption of water in the cantonment and civil station of Poona was 799,701 gallons during the year. Taking the population at 32,247 as per census of February 1891, the average consumption per head per diem comes to 24.80 gallons.

6. The working expenses of the year amounted in all to Rs. 89,248, of which Rs. 52,245 are debitable to the maintenance of irrigation and Rs. 37,003 to the maintenance, &c., of the water-supply, the latter amount includes expenditure incurred in pumping done by steam and water-power.

The cost of the maintenance of the irrigation works, Rs. 52,245 against Rs. 51,312 in the previous year, represents a rate for maintenance, administration, &c., of Rs. 593.69 per mile of main canal opened and Rs. 7.69 per acre irrigated.

The above figures are inclusive of all establishment charges. The actual cost of maintenance of the Poona water-supply for works alone amounted to Rs. 16,332 as compared with Rs. 14,141 in the previous year. The figures for the Mutha Canal under the same heading were Rs. 22,170 as compared with Rs. 20,939 in the previous year. In the case of the Poona water-supply the excess is due solely to the fact that owing to the limited supply of water in Lake

Fife, pumping by steam had to be resorted to for a much longer period than usual. The cost of steam pumping this year was Rs. 5,488 as compared with Rs. 2,499 in the previous year. The new Worthington steam pumps have been erected and are now in good working order. The charge against working expenses for steam pumping will, therefore, be very considerably reduced in future.

As regards the Mutha Canals, the expenditure on maintenance was practically the same as in the previous year and the excess in the working expenses was due to the heavy silt and weed clearance (Rs. 600 more than last year) and to extensive repairs found necessary to pitching banks, Rs. 700. A re-arrangement of the existing maintenance establishment is now under consideration, and it is hoped that some reduction in this item of the working expenses will be possible during the next year.

7. Deducting the total working expenses Rs. 89,243 and Rs. 1,509, the amount of remissions and refunds, from the total earning, Rs. 208,321, the net profit from the work amounts to Rs. 117,564 or Rs. 1·85 per cent. on Rs. 63,50,822, the total entire capital outlay to the end of the year.

8. The areas irrigated were ascertained by actual measurements, the greater part of which were taken by measurers specially entertained for the purpose and the remainder by an Inspector when time could be spared from his ordinary work, and from 9 to 12 per cent. of the area was checked by the subordinate in charge.

The cost of measurements amounted to Rs. 1,050, or at the rate of 2 annas and 6 pies per acre against 1 anna and 6 pies in the previous year. The excess rate of one anna is due to scattered and reduced area.

9. The highest duty of water during the month in which no rain fell was obtained in April 1892, when the area irrigated was 4,013 acres and the average discharge 54·58 cubic feet per second, giving a duty of 73·53 acres per cubic foot per second, and the lowest was in March 1893 when the area irrigated was 5,465 acres and the average discharge 124·69 cubic feet per second, giving a duty of 43·83 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

No useful information of the kind can be obtained for other seasons owing to rain having fallen and the canals being single-banked.

Rainfall. 10. The rainfall of the year along the canal varied considerably.

The maximum was 43·79 inches at Poona and the minimum 34·93 inches at Uruli as under:—

		Kharif.	Rabi.	Total.
Poona Sassoon Hospital	...	28·57	15·22	43·79
Uruli	...	21·70	13·23	34·93

11. The characteristics of the rainfall last year were that the monsoon set in late at Kharakwāla, i.e., not till the beginning of July, consequently Lake Fife was not filled till the 11th July. There was favourable rainfall at the end of October which resulted in a diminished demand for water for rabi crops and as the supply in the Lake was ample, applications for a large area of new sugarcane were accepted during the kharif season of 1893-94.

12. A statement is appended giving the particulars of the water issued gratis or at reduced rates to various institutions in accordance with the orders issued by Government from time to time. From it it will be seen that local institutions have received water during the year at Rs. 5,428 less than the normal rates.

Items capable of assessments for which the project does not obtain credit.

13. The following is the comparison of areas as applied for and those actually irrigated :—

	AREA APPLIED FOR.			AREA IRRIGATED.			MONS.		LESS.	
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mutha Right Bank Canal ...	4,265	2,075	6,340	4,343	1,694	6,037	78	...	...	381
Mutha Left Bank Canal ...	304	143	447	576	184	760	272	41	...	...
	4,569	2,218	6,787	4,919	1,878	6,797	350	41	...	381

14. Remissions amounting to Rs. 205 have been granted during the year :
 of this Rs. 57-9-0 are on account of penal assessments reduced to single rates, Rs. 63-5-0 for rate for plants in pots reduced from Rs. 2 to annas 4, per Government Resolution No. 321 of 25th February 1892, Rs. 83-15-9 irrecoverable as per Government Resolution No. 238 of 7th February 1893.

15. Refunds amounting to Rs. 1,304 were sanctioned during the year, of which Rs. 76 are on account of erroneous assessments, Rs. 142-5-0 rate for plants in pots reduced to annas 4 per Government Resolution No. 321 of 25th February 1892, Rs. 57-10-0 assessments reduced from penal to single rates, Rs. 14 short supply of water, Rs. 739-11-7 rebate given to Indian Paper Mills Company for 75 days, that is, 55 days being short of 60 horse-power and 20 days canal closure, Rs. 159-3-1 to the Poona Municipality on account of erroneous assessment, *Rs. 114-12-0 sale-proceeds of mango fruit which was under dispute for some years, now refunded to the cultivator in the village of Vadgaon Budruk, taluka Haveli.

16. At the end of the year the number of trees on the Right and Left Bank Canals and on the head-works, &c., was 61,734.

The number of principal kinds were :—

Bábul	...	...	...	46,463
Jambul	...	...	...	774
Bor	...	...	...	885
Shindi	...	...	...	3,657
Mango	...	...	...	3,404
Bámbu	...	...	...	605
Umbar	...	...	...	419
Nimb	...	...	...	1,352
Sandal	...	...	...	335
Hiwar	...	...	...	521
Soundad	...	...	...	874
Tamarind	...	...	...	341

The number of miscellaneous trees was 1,924.

17. Observations to ascertain the loss by evaporation and leakage on the Mutha Right Bank Canal were not made during this year. They will be taken during next year and the result will be reported in the next revenue report.

18. Gaugings to ascertain evaporation and leakage were taken for broken periods in the months of April, May, June and July, January, February and March, or a total number of days 180. During this period the loss amounted to 147,658,446 cubic feet, or more than 1-20th of the total capacity of the lake above outlet level.

* Excluding refund of Rs. 45, deposited for mangoes sold to him,

POONA WATER-SUPPLY.

Statement showing Water-supplies given gratuitously or at reduced rates during 1892-93.

To whom supplied.	Quantity supplied.	Amount paid.	Value at 6 annas per 1,000 gallons.	Difference between 4 and 3.	Remarks.
1	2	3	4	5	6
		Rs. a. p.	Rs. a. p.	Rs. a. p.	
Civil Surgeon, Sassoon Hospital ...	730,150	136 14 3	273 12 6	136 14 3	
Do. do. ...	405,571	76 0 6	152 1 0	76 0 6	
Superintendent, Byramji Jijibhoy Medical School ...	338,850	63 8 3	127 0 6	63 8 3	
Superintendent, Lunatic Asylum...	280,940	52 10 7	105 5 2	52 10 7	
Secretary, Cantonment Committee :—					
„ (New Modikhāna) ...	1,178,458	220 15 2	441 14 4	220 15 2	
„ (Beef Market) ...	1,288,621	241 9 10	483 3 8	241 9 10	
„ (Malcolm Tank)...	674,665	126 8 0	253 0 0	126 8 0	
„ (Mutton Market) ...	1,312,661	246 2 0	492 4 0	246 2 0	
„ (Ashurkhāna) ...	14,32,000	268 8 0	537 0 0	268 8 0	
„ (Butter Mohlla) ...	1,432,000	268 8 0	537 0 0	268 8 0	
Convent School ...	165,847	31 1 6	62 3 0	31 1 6	
Jamsetji Fountain ...	1,095,000	.....	410 10 0	410 10 0	
Howds in Booty Street ...	4,380,000	.....	1,642 8 0	1,642 8 0	
Bazār Reservoir ...	1,460,000	.....	547 8 0	547 8 0	
Malcolm Tank ...	2,920,000	.....	1,095 0 0	1,095 0 0	
				5,428 0 1	

Statement showing Savings to Government through the introduction of Mutha Canal Water into Poona Cantonment for the year 1892-93.

		ANNUAL COST, 1892-93.							REMARKS.
No.	Item.	Bhisti Estab- lishment prior to Water-supply.	Bhisti Estab- lishment after Water-supply.	Bhisti Saving.	Water-rates.	Saving.	Excess.		
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		
<i>Military Department.</i>									
1	Controller of Military Accounts...	264 0 0	.....	264 0 0	84 3 0	179 13 0	.....		
2	Ordnance Department	264 0 0	.....	264 0 0	138 9 9	125 6 3	.....		
3	Executive Commissariat Office, Bakery Store-yard and Depot Transport Office	1,730 14 1	.....	1,730 14 1	3,073 12 10	.....	1,342 14 9		
4	Government Cattle Farm at Wanowdi	367 0 0	.....	367 0 0	131 0 2	235 15 10	.....		
5	Military Prison	312 0 0	.....	312 0 0	234 13 1	77 2 11	.....		
6	Staff Hospital	193 0 0	.....	193 0 0	63 10 6	129 5 6	.....		
7	Quarter-Master General's Office...	30 0 0	.....	30 0 0	56 0 2	.....	26 0 2		
8	European Regiment, Wanowdi ...	5,288 0 0	864 0 0	4,424 0 0	5,110 8 11	.....	686 8 11		
9	Do. do. Ghorpadi	5,064 0 0	840 0 0	4,224 0 0	5,158 2 9	.....	994 2 9		
10	Native Light Cavalry, including Hospital	624 0 0	648 0 0	-24 0 0	2,180 1 10	.....	2,204 1 10		
11	Right Flank, Native Infantry Hospital	1,293 10 0	1,115 8 0	178 2 0	2,773 8 8	.....	2,695 6 8		
12	Left Flank, Native Infantry Hospi- tal	1,080 0 0	912 0 0	168 0 0	5,322 13 4	.....	5,154 13 4		
13	Centre Native Infantry Line and Hospital	1,080 0 0	929 0 0	151 0 0	1,917 11 6	.....	1,766 11 6		
14	Rest Camp ... ..	.....	.....	.....	.....	.....	.....	No water was given to Rest Camp dur- ing the year.	
	Total, Military Department ...	17,590 8 1	5,308 8 0	12,282 0 1	26,245 0 6	747 11 6	14,710 11 11		
<i>Civil Department.</i>									
1	Photographic Office	73 0 0	.....	72 0 0	176 10 11	.....	104 10 11		
2	Lunatic Asylum	180 0 0	.....	180 0 0	52 10 7	127 5 5	.....		
3	Post Office	36 0 0	.....	36 0 0	49 5 7	.....	13 5 7		
4	Executive Engineer, Poona Dist- rict, Bund Garden	720 0 0	.....	720 0 0	378 6 2	341 9 10	.....		
5	Executive Engineer, Poona and Kirksee, now Military Works, Poona District, Wanowdi Store- yard and Office	42 0 0	.....	42 0 0	94 6 10	.....	53 6 10		
6	Sassoon Hospital	576 0 0	.....	576 0 0	212 14 9	365 1 3	.....		
7	Superintendent of Police	60 0 0	.....	60 0 0	140 6 10	.....	80 6 10		
8	Executive Engineer, Poona and Kirksee, now Military Works, Poona District, Wanowdi Store- yard... ..	21 0 0	.....	21 0 0	20 6 4	0 9 8	.....		
9	Executive Engineer, Poona District Council Hall... ..	144 0 0	.....	144 0 0	279 0 5	.....	135 0 5		
10	Do. do. Store-yard	51 12 0	.....	51 12 0	46 1 1	5 10 11	.....		
11	College of Science, Poona	240 0 0	.....	240 0 0	500 0 0	.....	260 0 0		
12	Judge's Court	144 0 0	.....	144 0 0	118 0 2	25 11 10	.....		
	Total, Civil Department ...	2,286 12 0	.....	2,286 12 0	2,068 9 8	864 0 11	645 14 7		
	Total, Military Department ...	17,590 8 1	5,308 8 0	12,282 0 1	26,245 0 6	747 11 6	14,710 11 11		
	Total, Civil Department ...	2,286 12 0	.....	2,286 12 0	2,068 9 8	864 0 11	645 14 7		
	Saving to Public Works Depart- ment on account of Bund Engine	33,367 0 0	.....	33,367 0 0	.....	33,367 0 0	.....		
	Savings to Government on account of water given to Rastia's aqua- duct as per Government Resolu- tion No. 468 of 19th December 1882... ..	.....	.....	.....	.....	.....	.....		
	Total ...	53,244 4 1	5,308 8 0	47,935 12 1	28,313 10 2	34,978 13 5	15,356 10 6		
	Deduct Excess ...					15,356 10 6			
	Total Saving ..					19,622 1 11			

The savings to Military and other departments on account of the difference between the amount formerly expended by them on account of their water-supply under the old system and the amount paid by them last year to the Irrigation Department in water-rates amounted to Rs. 19,622 against Rs. 20,464 last year. The difference is due to increase in the amounts of water-rates, etc., 1,315 in the Military Department and decrease of Rs. 458 in the Civil Department.

(10).—EKRU'K TANK.

The rainfall for the year under report was 35·34 inches (kharif 25·62, rabi 9·72). The previous year's was 22·90 (kharif 17·45, rabi 5·45). The rainfall was both seasonable and plentiful.

2. The area irrigated during the year was 3,038 acres, of which 2,425 were kharif and 613 rabi crops. The area applied for was 2,574 acres (2,017 kharif and 557 rabi), or 464 acres less. The cause of excess of actual irrigation over that applied for is that the cultivators are unable to estimate even approximately the area they propose to irrigate. The assessment on account of water-rates amounted to Rs. 14,760, the gross assessed revenue from all sources being Rs. 23,830 and the net revenue *minus* Rs. 3,213 (Rs. 23,830 *minus* working expenses Rs. 27,043).

The area irrigated by each canal and water-rates assessment thereon were as follows:—

Name of Canal,	Average discharge during the year.	AREA IRRIGATED.					
		Kharif.		Rabi.		Total.	
		Areas.	Assess-ment.	Areas.	Assess-ment.	Areas.	Assess-ment.
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.
Left Bank Low Level Canal ...	21·53	1,776	9,560	460	1,698	2,236	11,253
Left Bank High Level Canal...	2·75	260	1,465	13	84	273	1,549
Right Bank High Level Canal.	7·34	389	1,680	140	378	529	1,958
Total ...	...	2,425	12,605	613	2,155	3,038	14,760

Comparison with Irrigation and Revenue of previous years.

3. The following statement gives a comparison with previous years:—

Year.	Kharif.	Rabi.	Total.	Water-rates.	Gross Revenue.	Working Expenses.	Net Revenue.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1887-88... ..	1,357	757	2,114	6,651	13,784	15,953	—2,169
1888-89... ..	1,620	1,356	2,976	7,652	15,209	14,666	543
1889-90... ..	1,335	1,199	2,534	9,441	18,532	13,231	5,301
1890-91... ..	1,835	763	2,598	10,188	23,516	13,824	9,692
1891-92... ..	1,935	1,202	3,137	13,125	27,470	13,770	13,700
1892-93... ..	2,425	613	3,038	14,760	23,830	27,043	1,908

4. This gives an increase of 490 acres kharif and a decrease of 589 acres rabi. The former is largely due to the increase in Causes of variation explained. hot weather fodder crops, these crops being naturally grown after a bad rabi season such as that of 1891-92. The latter is due to the seasonable rainfall. On the whole there was an increase in the revenue from the water-rates of Rs. 1,635, though there was a decrease of Rs. 2,941 in revenue from canal produce—see paragraph 5—and hence chiefly the decrease of Rs. 3,640 in the gross revenue. The fact that the net revenue is a minus quantity is principally on account of the heavy charges, direct and indirect, due, *firstly*, to the sub-divisional officer being an Assistant Engineer, 1st Grade, and *secondly* to the improvement works. The sub-division is now to be placed in charge of an experienced overseer. The improvements are of a permanent nature and the expenditure should be covered in a few years by the revenue resulting. The incidence of water-rate per acre irrigated was 4·86 as compared with 4·18 on the previous year. The difference is due to the increase on the high rated hot weather crop.

5. The gross revenue from sources other than water-rates was Rs. 9,070.

Source of Revenue other than water-rates.

Sholapur Water-supply, Railway Company, and Plantations.

This large amount is principally made up from receipts on account of water supplied to the Sholapur Municipality for water-supply, Rs. 3,492, Railway Company, &c., Rs. 1,186, and from sales of wood from the plantations and of other canal produce, Rs. 4,116. The revenue from the former continues to increase with the demand for the water-supply; while the enhanced value of fuel and the proximity of the market render the latter a very profitable source of revenue and one, therefore, that should be given special attention to. The revenue from this source was last year Rs. 7,057. The falling off is mainly due to fewer sales of trees. The expenditure on plantation, &c., amounted to Rs. 1,024, or nearly 25 per cent. of the revenue, Rs. 4,116, under this head. The trees above and below 5 feet number 69,649 and 77,159 respectively. The amount realized from fruit trees was Rs. 104-15-0, or Rs. 62-13-0 in excess of the previous year's; but it is feared that fruit trees can never be a source of any appreciable profit. Even when the soil and climate are suitable the scattered position along the canal banks renders it impossible to give them the attention they require.

The following gives the detail of the revenue from all sources other than water-rates.—

			Rs.
Sholapur Municipality	...	...	3,492
Water sales...	Railway Company	...	501
	Spinning and weaving mills, &c.	...	474
	Other sales of water	...	211
Receipts from Plantations and other canal produce	...	...	4,116
Rents of buildings	...	...	6
Miscellaneous	...	...	270
Total	...	...	9,070

6. The rainfall over the 159 square miles catchment area was gauged in

The Tank supply.

one place only and amounted to 32·51 inches between the 1st June and 31st October. The lowest R. L. of the water in the tank was 196·30 or 30½ feet above the low level cannal sluice and 5¼ above the high level on the 1st May 1892. The rains then commenced and on the 31st August 1892 the waste weir (R. L. 204 or 38½ feet above the low level sluice) began to flow. Allowing for canal discharge and omitting only the evaporation and absorption over the tank area, this represents a run-off the catchment area of 0·24; the rainfall during this period, i.e., 1st May to 31st August 1892, gauged at Hippargi, being 18·49 inches. The maximum height R. L. 207·10, or 3·10 feet above waste weir, was reached on the 17th September 1892. The waste weir was flowing continuously up to the 25th November 1892. On the 31st March the Tank level stood at R. L. 201·50 or 35½ feet above the low level sluices. The water-supply was, therefore, abundant throughout the year under report.

7. The following shows the average monthly discharge of the canals at the head :—

Month.	Perennial Canal.	Left Bank Canal.	Right Bank Canal.	Total.
April 1892 ...	23·57	3·00	7·91	34·48
May " ...	29·24	3·83	9·70	42·77
June " ...	18·88	3·76	8·31	30·95
July " ...	24·35	3·15	7·99	35·49
August " ...	22·24	2·82	10·03	35·09
September " ...	12·20	1·21	2·55	15·96
October " ...	21·98	2·27	3·70	27·95
November " ...	21·91	2·25	5·13	29·29
December " ...	23·06	2·82	9·13	34·51
January 1893 ...	12·12	3·88	10·41	26·41
February " ...	28·93	4·18	10·97	44·08
March " ...	26·31	3·48	8·18	37·97

8. The remarks on the duty given in paragraph 7 of the report on Mhasvad Tank apply here. As shown in Statement I—E. the duty for kharif crops is 78·70 and rabi 20·89.
Duty of water.
9. The working expenses, including indirect charges, amounted to Rs. 27,043. The item "Maintenance and Repairs" amounted to Rs. 7,000, of which Rs. 1,273 were on account of the dam. Thus the expenditure on the canals, including plantations Rs. 1,024, amounted to Rs. 5,728 representing 119 per mile of canal. The charges could not be reduced with due regard to efficiency.
Working expenses.
10. The increase of irrigation has been hitherto checked by the insufficient discharging capacity of the main canal (perennial). The improvement work of clearance and widening now in progress will double the discharge that can be passed down. This does not mean necessarily that the irrigated area will be doubled, as the average discharge required is not likely to be doubled; but in any case it will mean a very large increase towards the tail of the canal where the water is eagerly expected by the cultivators. However it must not be supposed that there will be as good an incidence of water-rate per acre irrigated as on the land at the head of the canal. Sugarcane and other bagayat crops will not be grown largely at the tail of the canal owing to the scarcity of manure.
Revenue prospects.
11. The area irrigated was measured at a cost of Rs. 503, or Re. 0-2-7 per acre.
Cost of measurement of irrigation.
12. The irrigation revenue of the Ekruk Tank depends upon the perennial canal. As shown in paragraph 10, there should now be a large increase in revenue on account of the discharging capacity of the canal being doubled by the improvements now in progress. These should be completed before the rabi season of 1893-94. The soil is rich, but the great check to the increase of irrigation is the scarcity of manure, the price of which in late years has more than quadrupled. The Sholapur town manure, which was formerly sold at Re. 1 a cart, is now Rs. 4-12-0. The area of sugarcane cannot, therefore, be extended. For the greater part of its length up to mile 18 this canal does not get silted from the cross drainage as the latter has been provided for by aqueducts, &c. Now that the water is to be run to the tail, repairs and improvements will be done to the escapes, &c., there, and with careful supervision it is not anticipated that the cross drainage will be troublesome. The Shelgi aqueduct mentioned in previous reports has not been the cause of any anxiety or trouble this year although there have been high floods and any further special outlay on the canal beyond that already sanctioned is unnecessary. Such silt as gradually collects from year to year in the canal is almost entirely from the side slopes of the canal itself except, as above mentioned, in quite the tail portion, where cross drainage has not only been admitted, but, as there has been no irrigation, ordinary repairs have been neglected.
General remarks.
- Of the 2 high level canals, the Right Bank has much land under command and irrigates even now in its present state an area of about 550 acres. The cross drainage is admitted into the canal and there is during the rains, therefore, some extra trouble and expense in clearing the silt brought in and in closing breaches. By a small outlay on improving the inlets into and escapes out of the canal and special supervision during the rains, the nuisance can be considerably lessened and the canal need not then be closed as recommended in a previous revenue report. The silt brought in by cross drainage is very inconsiderable, if the flood is admitted with checked velocity and without scouring the banks, &c. The deposit from these floods is usually a heap of a few cubic feet, sufficient indeed to form a barrier across the canal, but removeable expeditiously at a trifling cost.
Perennial canal.
The high level canals.

(11).—KRISHNA CANAL.

According to Government of India's instructions the Capital Account of the canal was closed at the end of March 1892. After the closing of the construction estimate some works remained to be completed.

2. The works for which the plans and estimates were sanctioned, were carried out at a cost of Rs. 9,154, and the remaining works were in progress.

3. The rainfall of the year as gauged in the 15th mile of the canal was 36·13 inches (kharif 26·68 inches and rabi 9·45 inches) against 16·65 inches in the previous year, and 25·63 inches, the average of the past 10 years for the two seasons.

4. The area irrigated was 1,751 acres of kharif and 2,045 acres of rabi, total acres 3,796. The following table compares the areas irrigated during the past four years with that of the year under report :—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1888-89	...	...	1,919	1,456	3,375
1889-90	...	...	1,667	2,065	3,732
1890-91	...	...	1,736	2,214	3,950
1891-92	...	...	3,259	2,115	5,374
1892-93	...	...	1,751	2,045	3,796

5. The area irrigated was 15 per cent. of the irrigable area under command of the canal ; and the measured area was 2 per cent. more than that applied for.

6. The total water-rate assessment of the year amounted to Rs. 36,579. The table below compares the assessment during the year with the previous four years :—

			Kharif.	Rabi.	Total.
			Rs.	Rs.	Rs.
1888-89	...	...	22,268	5,236	27,504
1889-90	...	...	22,241	7,365	29,606
1890-91	...	...	23,630	9,077	32,707
1891-92	...	...	32,962	6,300	39,262
1892-93	...	...	28,669	7,910	36,579

7. On account of deficient rainfall during 1891-92, the discharge of the river was very low and the applications for water could not therefore be accepted till the end of May 1892, *i.e.*, till the sowing season of the perennial and hot weather crops was nearly over ; the rainfall during the year under report was comparatively greater than that in 1891-92 ; and besides it was seasonable, and favourable to the crops. This is the cause of the falling off in the revenue and the area irrigated as compared with the previous year ; but the year 1891-92 being one of great scarcity, the year under report cannot properly be compared with it. Omitting the abnormal year, the revenue shows a very satisfactory increase each year, which is due to the cultivators on the canal having had experience of the profit to be derived from irrigation ; and to the economical management in the distribution of water.

8. The revenue from all other sources amounted to Rs. 3,478 (Rs. 3,145 from plantations alone), bringing the gross revenue of the year to Rs. 40,057.

9. The working expenses, including direct and indirect charges, amount to Rs. 15,706, showing an increase of Rs. 4,605 on the figures of the previous year. This increase is due to the special repairs that were carried out to the canal on account of damage done by the heavy rainfall during the year. The working charges for the year represent a cost of Rs. 257 per mile of canal and distributaries open, and Rs. 4·14 per acre irrigated, against Rs. 182 per mile of canal and Rs. 2·07 per acre irrigated during the previous year. The percentage of working expenses to gross revenue was 39 as compared with 27 in the previous year.

10. After deducting working expenses from the gross revenue there was a net profit of Rs. 24,351, equal to a rate of 3 per cent. on an outlay of Rs. 8,13,068 for direct charges.

11. The average water-rate and cost of measurement as compared with the previous three years was as under :—

Years.	Total area irrigated.	Average incidence of water-rate per acre.	COST OF MEASUREMENT.			
			Total Cost.	Per Acre.		
				Rs.	a.	p.
1889-90	3,732	7-9	491	0	2	1
1890-91	3,950	8-28	400	0	1	7
1891-92	5,374	7-31	549	0	1	7
1892-93	3,796	9-63	896	0	3	9

This annual increase of rate per acre is very satisfactory, showing the increase in the area of superior class of crops.

12. The average duty of water obtained was for kharif 31 acres per cubic foot per second and that for rabi 28.

13. The number of trees of all classes on the canal at the end of the year was 22,988, and in addition 1,500 new saplings were planted, bringing the total up to 24,488. The number of trees cut and sold during the year was 1,286 which realized Rs. 2,347, while the total expenditure on plantations during the year amounted to Rs. 551.

MINOR WORKS AND NAVIGATION.

(12).—KHA'RI CUT.

Although the area irrigated during the year under report was only $\frac{4}{5}$ of that irrigated last year, yet the revenue derived from this area was satisfactory, for remissions of Rs. 54 in the kharif season only were required to be granted as the crops were well maintained throughout the kharif and rabi seasons.

2. The rainfall during the year was 50·59 inches in the kharif and 0·59 inches in the rabi against 25·63 inches in kharif and 0·02 cents. in the rabi season of the previous year, the average of the last five years being 21·35 inches and 0·89 cents. in the kharif and rabi seasons respectively.

3. The Chándola Tank, which is the main storage reservoir of the irrigation, was full in the beginning of August, and the favourable rains of September again brought it up to full supply level, thus greatly facilitating cultivation.

4. The late rains of September left a sufficiency of water for rabi crops also, which have in consequence been good.

5. The area irrigated during the year as compared with that in the previous year was as follows :—

	Kharif.	Rabi.
	Acres.	Acres.
1891-92	1,474	...
1892-93	778	64

6. The assessments, excluding remissions and free grants (the former amounting to Rs. 54, and the latter Rs. 751) were Rs. 4,161 during the kharif and Rs. 213 during the rabi seasons as compared with Rs. 5,754 in the kharif and none in the rabi of the previous year.

7. The working expenses of the year amounted to Rs. 4,249 against Rs. 3,873 of the previous year, the rate per acre being Rs. 5·04 as compared with

Rs. 2·63 of the previous year. The increase in the rate is due to the working expenses having exceeded those of the previous year, while the areas irrigated fell considerably short of the acreage for 1891-92, the reason being precisely the same as that given in dealing with the Hāthmati Canal.

8. The area under irrigation was measured by the establishment specially employed for the purpose at a total cost of Rs. 67, or about $1\frac{1}{4}$ anna per acre.

9. The average water-rate during the year was Rs. 5·19 per acre as compared with Rs. 3·90 of the previous year.

10. The actual supply abstracted from the Khāri river during the kharif season at the head of the Khāri Cut was 11·94 cubic feet per second and the area irrigated was 778 acres plus the area assessed on the Chandola Tank, *viz.*, 242 acres, making a total of 1,020 acres during the kharif season, which gives a duty of 85 acres per cubic foot of discharge.

11. The discharge at head-works during the rabi season was 2·78 cubic feet per second and the area irrigated was 64 acres, which gives a duty of 23 acres per cubic foot of discharge.

(13).—HARTALA TANK.

1. This tank has been in operation for 20 years.

2. The tank was more than half full at the beginning of the year and filled to overflowing on the 15th of June, the first replenishment being on 8th of that month. It continued full to the 15th of November and gradually subsided to 2·45 feet below the crest of waste weir on the 31st of March 1893. The storage on that date in the tank was 92·62 million cubic feet. The supply was more than sufficient to meet all requirements and was not fully utilized on account of the favourable rainfall of the year. The total area irrigable was 415 acres and the area irrigated 99 acres, *i.e.*, 1 acre kharif and 98 acres rabi.

Kharif	...	42·91	3. The rainfall during the kharif and rabi seasons of the year was 46·54 inches against 35·66 inches in the previous year, 24·27 inches being the average fall during the past 19 years; so that the year's fall was nearly double the average.
Rabi	...	3·63	
		<u>46·54</u>	

4. The area irrigated, 99 acres (against 142 acres of the previous year), was distributed as follows:—

1 acre rice,
90 acres wheat, and
8 acres gram.

The value of the crops is estimated at Rs. 4,549 by the local revenue officers.

5. The crop assessment was Rs. 196-1-0, as follows:—

						Rs.	a.	p.
Kharif	...	...	...	...	...	1	0	0
Rabi	...	...	...	...	...	195	1	0
Total Rs.						196	1	0

The revenue from other sources was Rs. 441-6-0, of which Rs. 411-2-0 represents the protective rate on land irrigable. The gross revenue was thus Rs. 637-7-0 against Rs. 1,027-10-2 of the previous year. The decrease is due to falling off in area irrigated and to the absence of cultivation in the tank bed, as the tank was full.

6. Even if the tank had not been full, there was little prospect of revenue from cultivation of the bed of the tank, as the cultivators find that the bābul trees growing on the tank margin interfere with the growth of crops, and harbour birds which do considerable damage. It is estimated that the bābul trees are likely, if allowed to reach full growth, to yield a more profitable return than the cultivation of land would afford, as there is a good market for firewood for the

factories, presses, &c., at Jalgaon, Bhusaval, Nargaon, Varangaon, &c. This makes the removal of the bábúl trees inadvisable, even to encourage cultivation. The counting and due conservancy of these trees is in hand.

7. The incidence of water-rate per acre was Rs. 1-15-8.

8. A remission of Rs. 3-12-0 was granted by the Revenue Department from the miscellaneous revenue for a field taken up by the Forest Department. The attention of the Collector of Khándesh has been called to the orders of Government against the afforesting of irrigable land, and he has been asked to arrange for its disforestation as early as practicable.

9. The realizations of revenue during the year amounted to :—

					Rs.	a.	p.
Water-rates	...	...	...	...	302	6	0
Miscellaneous	...	...	...	...	444	15	11
Total Rs.					747	5	11

10. There are no outstandings. The rabi assessments sent for realization after the close of the year will be collected in 1893-94.

11. The working expenses amounted to Rs. 725 as follows :—

					Rs.
In the Public Works Department	...	...	...	...	688
Collection charges in the Civil Department	...	...	...	...	37
Total Rs.					725

against Rs. 651 of the previous year, the excess being mainly due to increase in the direction charges debited to the Revenue Account this year. The charges are in excess of the assessed revenue of the year, *viz.*, Rs. 88.

12. The cost of measurements of crops irrigated during the year was Rs. 2, which gives a rate of 4 pies per acre on the total area of 99 acres measured. This economy is due to the measurement having been made by the canal establishment in the course of their usual duties. The cost is arrived at by considering the time actually spent in measurements alone, but this is evidently a wrong principle.

13. The area irrigated compares with that applied for as follows :—

			Kharif.	Rabi.
			Acres.	Acres.
Applied for	...	...	1	117
Assessed	...	...	1	98
Difference	...	...	...	19 decrease.

The decrease is due to over-estimate of areas when entered in water applications.

14. There have been no special observations to ascertain the duty of water used. In the kharif season the average discharge from the tank was 0.78 cubic feet per second, and in the rabi season 1.64 cubic feet per second, gauged at the tank outlet. These discharges give a duty of 1.28 acres per cubic foot in the kharif season and 59.75 acres per cubic foot in the rabi season. In the former case the area is so small as to make the figure of duty of no value.

15. The loss by evaporation and absorption is calculated to be as follows :—

				Feet.
Kharif season—April to June 1892, 68 days	...	...	...	2.25
July to September 1892	...	...	...	Nil.
Rabi season—October 1892 to January 1893, 75 days	...	...	...	1.28
Hot season—February and March 1893, 57 days	...	...	...	1.11
Total				4.64
Average daily loss	...	...	...	0.0232

almost the same as that of the last year.

(14).—MHASVA TANK.

1. This tank has been in operation for 16 years.

2. The water-supply was sufficient throughout the year to meet the wants of irrigation, but was not fully utilized. At the end of the previous year the depth of water was 16·75 feet, which went down to 13·84 feet before replenishment commenced. It filled to overflowing on 30th August. After serving the kharif and rabi demands of the year, there were 18·63 feet of water above the outlet level at the end of the year, or 100·50 millions cubic feet.

3. The rainfall from 1st April 1892 to 31st March 1893 was 40·79 inches against 26·76 inches in the previous year, the average of the past 15 years having been 29·52. Of the fall given above 36·48 inches were in the kharif season and 1·64 inches in the rabi season. Notwithstanding this large rainfall the area irrigated has been 2 per cent. in excess of that of the previous year. It amounted to 123 acres, of which 11 acres consisting of—

7 acres plantains,
1 acre guava,
2 acres chillies,
1 acre onions,

were kharif and 112 acres consisting of—

88 acres wheat,
20 acres gram,
1 acre pea,
3 acres chillies,

were rabi.

4. The value of these crops is estimated at Rs. 2,266 by the revenue officers of the taluka.

5. The assessed revenue amounted to—

			Rs.	a.	p.
Water-rates ...	...	...	...	313	5 0
Other sources	...	...	...	375	10 9
Total			...	688	15 9

The rate of assessment per acre irrigated is Rs. 2-8-9.

6. There have been no remissions during the year.

7. The realized revenue amounted to—

			Rs.	a.	p.
Water-rates ...	...	...	...	340	10 0
Other sources	...	...	...	375	10 9
Total			...	716	4 9

8. There are no outstandings, except the rabi assessments of Rs. 226-12-0, which were sent to the Collector for realization after the close of the year.

9. There were no refunds during the year.

10. The working expenses amount to —

		Rs.
In the Public Works Department	...	1,360
Collection charges in the Civil Department	...	28
Total		1,388

These are in excess of those of previous year, which amounted to Rs. 1,230 in all. The increase is partly due to the cost of additional repairs which were absolutely necessary, and partly to heavy direction establishment charges.

11. The cost of measurements of crops irrigated was Rs. 7, similar as last year, and gives a rate of 11 pies per acre on the area irrigated, whole of which was measured.

12. The area assessed compares as shown below with the area for which water applications were received :—

Areas.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Applied for ...	13	118	131
Assessed ...	11	112	123
Difference ...	2	6	8

The difference is due to irrigation being slightly short of the estimate.

13. The assessment of the year on account of water-rates was made on the same scale as last year, and on tabulation shows as follows :—

No.	Crops.	Area.	Assessment.
		Acres.	Rs.
1	Perennial ...	8	75
2	Eight months...	5	17
3	Four-months ...	109	217
4	Monsoon dry...	...	...
5	Hot weather ...	1	4
	Total ...	123	313

As several times previously reported, the present water-rates are fair and it may be added that a reduction in rates is not likely to bring larger areas under irrigation. The holders of land do not use the water to a greater extent, not because the present water-rates are too high but because their holdings are large and capable of yielding good dry-crops in years of average rainfall. Many of the cultivators seek the aid of the tank only in years of scanty and unseasonable rainfall.

14. The "duty" of water used for irrigation is as follows :—

Kharif 14·66 acres, and
Rabi 68·29 acres.

No special observations were made for ascertaining duty.

15. The loss by evaporation and absorption was calculated to be as under :—

	Feet.
Kharif season—April, May and June 1892, 65 days ...	2·77
July to September 1892 ...	Nil.
Rabi season—October 1892 to January 1893, 73 days ...	1·77
Hot season—February and March 1893, 57 days ...	1·27
Total ...	5·81
Average daily loss ...	0·0298

(15).—JÁMDA CANALS.

1. These canals have been in operation for 26 years.

2. The supply of water in the Girna river which feeds these canals, without any storage work to supplement it, was much better during the year under report than in the past four years. The minimum discharge of the river in the hot weather at the commencement of the year was 0·58 cubic feet per second, and what was available during April and May was utilized in the watering of sugar-cane and hot weather crops. The minimum kharif and rabi discharges of the year were 100·95 and 165·46 cubic feet per second respectively, against 57·30 and 57·22 cubic feet per second during the previous year. These discharges were ample to meet all requirements and the kharif and rabi areas were largely in excess of those of the previous year. The minimum discharge at the close of

the year was 63.04 cubic feet (against 9.28 cubic feet per second of the previous year), an increase which should be favourable to the next year's sugar sowings.

3. The favourable state of the river was of course due to the rainfall in the catchment which is shown in the following table giving figures for 5 rain gauge stations:—

Rain Gauge.	Rainfall in 1891-92 in inches.	Rainfall in 1892-93 in inches.	Remarks.
Kalvan	20.74	28.95	Gauge in Mámlatdár's Kacheri.
Aliabad	37.54	46.17	Departmental gauge established in connection with Mosam Reservoir project.
Satana	16.11	23.03	Gauge in Mámlatdár's Kacheri.
Málegaon	14.90	36.76	Do. do.
Nándgaon	22.46	36.57	Do. do.
Average	22.35	34.29	

4. The rainfall in the canal district is gauged at 4 stations, one at the head of the canals, another about the middle, and one near the tail of each. The first two are departmental gauges; the third is at the Government Farm and the fourth in the Mahálkari's Kacheri at Bhadgaon. The falls in the kharif and rabi seasons of the year are given in the following table compared with the corresponding figures of the previous year:—

	Kharif.		Rabi.	
	1892-93.	1891-92.	1892-93.	1891-92.
Jámda Bungalow	42.91	21.48	1.16	0.87
Kolgaon	45.07	22.15	2.33	1.12
Government Farm	35.93	25.94	2.61	1.62
Mahál Kacheri	39.20	27.75	3.38	1.43

The fall was much greater than last year. Nevertheless there was an increase of 160 per cent. in the area irrigated this year over that in last year.

5. The areas this year were:—

	Acres.
Kharif	757
Rabi	1,514
Total	2,271

The areas irrigated last year were:—

	Acres.
Kharif	99
Rabi	774
Total	873

The increase in kharif irrigation is due to the watering of 642 acres of monsoon dry-crops rendered necessary by the rain holding off in the early part of the monsoon; and the late heavy rain in the kharif season damaged some of the dry-crops which had to be rooted out, and the rabi crops which took their place were watered from the canals.

6. The assessments of the year amounted to :—

	Rs.
Water-rates	4,177
Other sources	1,249
Total	5,426

7. There were no remissions. Rs. 6 had however to be remitted during the year from the last year's rabi demands from the Government Farm at Bhadgaon, where a crop was partially watered from a well when the canal-supply failed in the hot weather of 1892.

8. The amounts to be realized during the year were as follows :—

	Rs.
Last year's arrears...	286
Rabi demands, 1891-92, <i>minus</i> the above remissions	1,619
Kharif demands, 1892-93	1,101
Other sources	1,248
Total	4,254

Of these Rs. 4,233 were realized during the year, leaving Rs. 21 as arrears to be recovered.

9. The water-rate assessment per acre amounted to Rs. 1.13.5 against Rs. 2.10.4 in the previous year. The diminution in the rate is partly accounted for by the increase of low-rated kharif and partly by half rates having been charged for the greater portion of the perennial irrigation which owing to the failure of greater supply in the river in the hot weather were partly irrigated from wells.

10. The working expenses during the year amount to Rs. 12,369 against Rs. 16,482 in the previous year, showing a reduction of Rs. 4,113.

11. The cost of measurements per acre irrigated separately on the two canals was as given below :—

Canal.	Area irrigated.	Area measured.	Cost of Measurements.	Rate per acre measured.
	Acres.	Acres.	Rs. a. p.	Rs. a. p.
Left Bank	1,919	812	67 15 8	0 1 4
Right Bank	352	110	8 9 8	0 1 3

showing that only 40 per cent. of the area irrigated had to be measured; 60 per cent. of the irrigated area was in the land subdivided for irrigation purposes, or in whole fields. The irrigators are becoming alive to the benefit derived from the subdivision of land for irrigation purposes, and applications are being received from time to time for further subdivisions of plots in convenient sizes, the applicants having in some cases volunteered to bear the cost of such subdivision.

12. The areas assessed compare with those applied for as follows :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Applied for	835	1,470	2,305
Assessed	757	1,514	2,271
Difference	78	44	34

The decrease in the kharif season is principally in monsoon dry crops, and due to rain having fallen after applications were received. The increase in the rabi areas is due to under-estimates.

13: In the following table the areas irrigated are classified according to seasons and rates :—

No.	Classification.	Area irrigated in acres.	Assessment in Rs. at present scale of water-rate.
		Acres.	Rs.
1	Perennial	52	554
2	Eight months	54	216
3	Four months	1,499	3,001
4	Monsoon dry	642	321
5	Hot weather	24	85
	Total ..	2,271	4,177

Of the perennial crops small areas were partially watered from wells and assessed at half rates. It is still noticed that the increase in water-rates which came into force from 1889 does not tend to diminish the extent of irrigation under the canals; that area fluctuates according to the nature of rainfall and the supply of water available in the river.

14. Special observations were made in the village of Kolgaon during the rabi season to determine the duty of water and the quantities required for the maturing of gram and wheat crops, with the following results :—

Survey No.	* Crops.	Number of waterings.	Area.	Quantity of water used.	Duty (123 days).
			A. g.	Cub. ft.	Rs.
57 6	Gram	3	0 28	28,870.	257
62 3, 4, 5 and 6	Wheat (bansi) ...	2	1 36	46,980	429

i.e., about 3½ inches in depth for each watering of gram and 3¼ inches for wheat.

(16).—PARSUL TANK.

1. This tank has been in operation for four years.

2. The following table shows the amount of the revised estimate and the actual expenditure to end of the year under report :—

	Estimate as lately revised.	Outlay to end of 1892-93.
	Rs.	Rs.
Works	1,63,275	1,56,277.
Establishment	42,875	41,236
Tools and Plant	9,286	9,277
Capital Receipts	70	71
Direct charges	2,15,366	2,06,719
Capitalization	2,255	1,078
Leave and Pension allowance	6,021	5,792
Indirect charges	8,246	6,870
Total	2,23,612	2,13,589

3. The capital outlay on works has been Rs. 3,894 spent on distributaries sanctioned during the previous year. They are in progress and are expected to

be completed before the rains of 1894. The irrigation at Umrāna and Soundāna has been effected by channels formerly in existence.

4. The land taken up temporarily for materials required for embankment, &c., is being restored to cultivation through the Revenue Department, the proceeds being credited to the Capital Account of the work. The details of such land are as follows:—

Village.	Survey No.	Area.	Compensation originally paid.	Proceeds now realised by sale.
		A. g.	Rs.	Rs.
Umrāna	214	12 18	500	150
	222	13 11		
	224	17 34	200	180
	Total	...	700	330

The short realizations are considered to be due to the removal of the top layers of earth for embankment.

5. The quantity of water stored sufficed to meet the demands of irrigation. There were 30·30 million cubic feet of water in the tank at the commencement of the year and this was reduced to 14·70 million cubic feet before replenishment commenced, on 5th June. The tank filled to overflowing on 12th July 1892. At the close of the year the quantity in store was 67·26 million cubic feet.

6. The rainfall from 1st April 1892 to 31st March 1893 (gauged at Umrāna) was 35·76 inches, against 14·07 inches during the previous year, 20·42 inches being the average of the past 10 years. The kharif and rabi falls of the last four years are compared in the following table:—

Seasons.	1889-90.	1890-91.	1891-92.	1892-93.
	Inches.	Inches.	Inches.	Inches.
Kharif season	8·56	12·75	12·67	33·27
Rabi do.	4·43	5·47	0·91	1·64
Total	12·99	16·22	13·58	34·91

The exceptional kharif fall made the monsoon dry-crops independent of tank supply. The rabi rainfall was apparently below the average, and the extent of irrigation remained much the same as last year: see following paragraph.

7. The irrigated area was 333 acres and compares with that of the previous three years as follows:—

Year.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1889-90	190	124	314
1890-91	179	226	405
1891-92	115	296	411
1892-93	73	265	338

The decrease may be taken to be due to the exceptionally heavy rainfall.

8. The area irrigated in each village was as follows:—

	Kharif.	Rabi.
	Acres.	Acres.
Umrāna	50	119
Soundāna	23	146
Total	73	265

The area of each crop was as follows :—

	Acres.
Surgarcane	1
Guava	1
Fodder	36
Chillies	2
Methi	40
Wheat	150
Gram	66
Bajri	22
Sesame	5
Plantains	6
Miscellaneous	9
Total	338

9. The water assessment of the year amounted to Rs. 1,445-9-0, thus :—

	Rs.	a.	p.
Kharif	859	9	0
Rabi	1,086	0	0
Total	1,445	9	0

and the assessment from other sources to Rs. 12, total of the year being Rs. 1,457-9-0.

10. The realizations during the year were :—

	Rs.	a.	p.
Water-rates	3,000	13	0
Other sources	12	0	0
Total	3,012	13	0

11. There are no outstandings except for rabi demands sent for realization after the close of the year. The amount of these is Rs. 1,086.

12. The working expenses during the year amounted to Rs. 1,071, inclusive of Rs. 150 for collection charges in the Civil Department. The increase as compared with the previous year is partly due to direction establishment charge being greater, and partly to greater charge on collection of revenue due to all the arrears of revenue having been realized during the year.

13. The revenue results to end of the year under report since the opening of the tank are these :—

	ASSESSMENTS.		REALIZATIONS.		Working Expenses.
	Water-rates.	Miscellaneous.	Water-rates.	Miscellaneous.	
	Rs.	Rs.	Rs.	Rs.	
1889-90... ..	746	15	...	15	...
1890-91... ..	1,114	7	...	7	160
1891-92... ..	1,825	...	1,044	...	851
1892-93... ..	1,446	12	3,001	12	1,071
[Total	5,131	34	4,045	34	2,082

The net earnings in four years were Rs. 3,083 and in the year Rs. 387.

14. The sanctioned water-rates per acre are as under :—

	Rs.
Khárif	1
Rábi	4
Hot weather... ..	6

There are no special rates for perennial and eight months crops which, when watered, are charged for according to the seasons during which they receive water.

15. The details of crop classification according to seasons is as follows :—

	1889-90.	1890-91.	1891-92.	1892-93.
Kharif	188	170	23	27
Rabi	126	227	291	267
Hot weather	...	8	97	44
	314	405	411	338

Considering the nature of the rainfall during the year, the result of irrigation is satisfactory.

16. There was no separate expenditure on account of crop measurements, the work having been done by the usual canal establishment.

17. The area applied for during the year and that actually assessed are compared in the following table :—

	Kharif.	Rabi.
	Acres.	Acres.
Applied for	90	161
Assessed	73	265
Difference	17	104

The kharif area was less than applied for on account of the plentiful rainfall. The rabi area exceeded that in the applications because the irrigators of Soundána claimed the right to water without applying to this Department for all land classed as *káyam* (existing) *bágáyat* under the survey settlement which was prior to the construction of the Parsul Tank. This village has an old *bandhára* across the Parsul River with a channel running from it, irrigating a permanent "thal" of 92 acres and 31 gunthas, assessed at a consolidated revenue of Rs. 349-1-6, of which the irrigation share is Rs. 290-12-0. It is on account of this permanent irrigation that Government, in sanctioning the imposition of water-rates, ruled that the Soundána *káyam bágáyat* lands should have prior claims to the water available in the tank up to the end of February each year. This concession is adhered to. Doubts arose, however, as to the liability of the Soundána "thal" lands to assessment at the crop rates sanctioned for the tank, in addition to the irrigation share of land revenue. On a reference made to him on the subject, the Collector of Násik decided that the crop rates should be levied in addition to the "*káyam*" *bágáyat* rates, and this decision is being acted upon. Last rabi season, when the people objected to give applications for water for "*káyam*" *bágáyat* lands, a record of the crops irrigated was kept, and they were assessed and the assessments were included in the demand statements sent to the Collector of Násik for realization. This explains the difference between the total area applied for and irrigated in the rabi season.

The question of the assessment of the Soundána "thal" lands for the use of Parsul Tank water will form the subject of a separate report.

18. It was discovered during the year that irrigation was practised for rabi crops at Nándgaon, under command of this tank, from a temporary bund across the Parsul River. Permission was granted for this irrigation by the Revenue Department, which assessed the land and credited the revenue realized to Land Revenue to the amount of Rs. 11, as follows :—

	Area.	Revenue.
	Acres.	Rs.
1889-90	...	...
1890-91	2	1
1891-92	19	10
	—	—
Total	21	11
	—	—

the rate of assessment being 8 annas per acre. The question of crediting this revenue to the Parsul Tank was referred to the Commissioner, Central Division, who did not think it desirable to address Government on the subject, as the sum involved was very small. Nevertheless it seems clear that it should be so credited, or that a line be drawn indicating the minimum revenue so gained shall be ignored as creditable to the tank.

19. The calculated loss by evaporation and absorption is as under :—

Kharif season—April, May and June 1892, 62 days ...	3.69 feet.
“ July to September 1892, (tank full) ...	0.00 „
Rabi season—October 1892 to January 1893, 82 days ...	1.62 „
Hot season—February and March 1893, 59 days ...	0.93 „
Total ...	6.24
Average daily loss ...	0.0307

(17).—PRAVARA RIVER WORKS—OJHAR CANAL.

1. The area irrigated was 405 acres of kharif and 695 acres of rabi, or a total of 1,100 acres. The total shows a decrease of 1,521 acres on the area of the last year. The decrease is due to timely and favourable rainfall.

Comparison of area applied for and irrigated.

2. The following is the comparison of areas applied for and those actually irrigated :—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE LESS IRRIGATED.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1892-93 ...	585	405	1,055	695	1,640	1,100	180	360	540

The falling off in the irrigated area in both the seasons was due to timely and favourable rainfall after the applications were received, which rendered the canal water unnecessary.

The area applied for but not irrigated is 49 per cent. of the area irrigated. The falling off in irrigation in the last two years has been very considerable as shown by the following figures :—

				Total Area irrigated.
1890-91 ...	...	...	...	3,162 Acres.
1891-92 ...	...	...	...	2,621 „
1892-93 ...	...	...	...	1,100 „

and the decrease has in each case to be attributed to timely and favourable rainfall either in one or both seasons. Short supply in the hot weather has also been given as a cause, but this is a factor which has always to be taken into account every year and the probability of it is duly considered by the cultivators when sending in their applications. It is not therefore peculiar to these years. The inference to be drawn from the figures given is that the canal beyond a certain point, which is fixed by the existing hot weather conditions, is used only as a protective work in case of deficient rainfall and that, given favourable rain, the area of irrigation will not vary much from this year's figure of 1,100 acres until by means of storage a supply in the hot weather can be ensured which will allow of extended *perennial* irrigation, and then the rabi area may also be expected to extend proportionately. Any increase under present condition simply means that water has been taken to save or help on a dry-crop because of the rain holding off, and cannot be held to indicate that irrigation is extending.

3. The total water-rate assessments, excluding remissions, of the year amounted to Rs. 3,471, being Rs. 2,062 for kharif and Rs. 1,409 for rabi, which, as compared with the year before, shows a decrease of Rs. 3,019, or 47 per cent.

4. Remissions to the extent of Rs. 27 were granted from kharif season as the crops suffered owing to short supply of water in the hot weather.

5. The incidence of water-rate per acre was Rs. 3.16 against 2.48 in the previous year. The increase is due to large decrease in the area of low-rated crops.

6. Rs. 1,686 were spent from Capital Account in completing a skew slab drain across the Loni-Hanmantgaon distributary, remeasuring land taken up for the Canal, and in constructing masonry outlets sanctioned in Government Resolution No. 159 W. I.—1817, dated 17th November 1892. The work of outlets is suspended.

7. The working expenses of the year amounted to Rs. 5,892 as follows :—

			Rs.
Maintenance and repairs	...	...	2,508
Share of establishment	...	...	2,644
Tools and plant	...	...	47
Share of collection charges	...	...	323
Indirect charges	...	...	370
Total			5,892

The working expenses of the last year amounted to Rs. 4,963. The rate of working expenses this year per mile of main canal open is Rs. 310 and per acre irrigated is Rs. 5.36.

The increase on maintenance and repairs is Rs. 108, due to repairs on account of some breaches in canal banks and to silt clearance. There is also increase on other items. The increase on establishment charges was due to increase in pay of the subordinate due to promotion and also to special establishment employed in connection with the revenue management of the canal.

8. The duty per cubic foot per second of water admitted to the canal was 11.07 acres in the kharif and 22.62 acres in the rabi season. That of the water actually utilized was 14.14 and 27.60 acres respectively, in the two seasons.

9. The water-rates are the same as those in force since 1889-90, when the old rates were re-established.

10. The cost of measuring 816 acres, excluding 284 acres subdivided, was Rs. 154, or 3 annas per acre, against Rs. 276, or 2 annas and 1 pie per acre last year. The rate is calculated upon the actual time of the measurer spent on measurement. The excess rate is due to the decrease in area and to the way in which the irrigation is scattered in patches along the length of the canal.

11. The rainfall during the year as gauged at Ashvi was kharif 29.63, rabi 4.91, total 34.54 inches, or 14.64 inches above the average of the last five years.

12. The discharge of the river was not sufficient in the hot weather. The discharge taken at Jorwa above the weir on 20th May 1892 was 9.30 cubic feet per second and it fell to 7.92 cubic feet on 26th May. Canal water was not flowing below mile No. 10 from 1st May, and the cultivators were obliged to make use of their wells to protect their crops. On 27th May the river came down in flood. In the monsoon and cold weather the river supply was ample. In January 1893 a temporary earthen bund, 2 feet high, was thrown on the weir as usual to increase the back-water during the hot weather.

13. At the end of the year the number of trees on this canal was 12,629.

Plantations. The number of principal kinds were:—

Bábul ...	9,346	Nimbhárá ...	9
Mango grafts ...	55	Nimb ...	1,607
Mango ...	900	Bore ...	88
Jámbul ...	241	Bámbu ...	158
Bakán ...	30	Moho ...	7
Sandal ...	61	Kyene ...	8
Orange ...	35	Siris ...	16
Miscellaneous trees ...	68		

The total number last year was 12,660. The decrease is due to the attack of white ants and to several trees having been blown down by the wind.

(18).—BHATODI TANK.

1. The area irrigated was 495 acres of kharif and 842 acres of rabi, or a total of 1,337 acres. The total shows a decrease of 239 acres on the area of the last year. The decrease is due to timely and favourable rainfall and short supply of water in the hot weather.

Comparison of area applied for and irrigated.

2. The following is the comparison of areas applied for and those actually irrigated:—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1892-93	401	495	846	842	1,247	1,337	+94	—4	+90

The difference between the area applied for and that irrigated is trifling and calls for no explanation.

3. The total water-rate assessments (excluding remissions) of the year amounted to Rs. 4,038, being Rs. 2,166 for kharif and Rs. 1,872 for rabi, which, as compared with the year before, shows a decrease of Rs. 780 or 16 per cent.

Water-rate assessment.

4. Remissions to the extent of Rs. 32 were granted from the kharif season as irrigators made use of their wells to protect their crops from drying when the tank supply fell short.

Remissions.

5. Rs. 21 were refunded to the irrigators of perennial crops as they did not get sufficient water to properly mature their crops and as well water was used owing to short supply.

Refund of revenue.

6. The incidence of water-rate per acre was Rs. 3.02 against 3.06 in the previous year.

Water-rate per acre.

7. There was no expenditure during the year from capital account, which is closed.

Capital Account.

8. The working expenses of the year amounted to Rs. 4,433 detailed as below:—

	Rs.
Maintenance and repairs ...	2,072
Share of establishment ...	1,671
Tools and plant ...	47
Share of collection charges ...	331
Indirect charges ...	312

Total ... 4,433

The working expenses of the last year amounted to Rs. 3,447. The rate of working expenses this year per mile of main canal open is 985 and per acre irrigated is Rs. 3.32. The increase on maintenance and repairs, Rs. 258, is due to special clearance of silt brought by rain water and to breaches in the canal banks. There is also an increase on other items. That in establishment charges is on account of increase in pay of the subordinate due to promotion.

9. The duty per cubic foot per second of water actually utilized was 140
Duty of water. acres in the kharif and 103 acres in the rabi season.

Water-rates.

10. The old water-rates were brought into force in 1889-90.

11. The cost of measurement amounts to Rs. 17, or Re. 0-2-2 per acre against Rs. 36 or Rs. 0-2-6 per acre irrigated last year.
Cost of measurement. Out of the irrigated area of 1,337 acres, 1,214 acres had merely to be inspected and checked with the registers of pot numbers and 123 acres had to be actually measured. The rate is calculated upon the actual time of the measurer spent on measurements.

12. The rainfall during the year as gauged at Bhatodi was kharif 36.44, rabi 5.58, total 42.02 inches, or 19.95 inches more than the average of the last five years.

Rainfall.

13. On 1st April 1892 the water in the tank stood at 5.65 feet above sill of outlet sluice, *i.e.*, at R. L. 75.65 against R. L. 82.44 on the same date in the previous year. By 4th May it had fallen below outlet level and the tank remained empty till 27th May, *i.e.*, for 24 days. The first replenishment took place on 28th May and the tank gradually began to fill. The highest level of water in the tank was 97.50 on 8th June, *i.e.*, 5 feet above crest of waste weir and 2.50 feet below top of dam. The waste weir was flowing for 90 days during the year. The R. L. of surface of water on 31st March 1893 was 91.90.

Water-supply.

14. At the end of the year, the number of trees on the canal was 6,461.
Plantations. The number of principal kinds were:—

Mango	...	1,308	Orange	...	19
Do. grafts	...	17	Jámbul	...	85
Tamarind	...	44	Nimb	...	437
Bore	...	65	Sandal	...	87
Khirmi	...	4	Siris	...	84
Rithe	...	1	Bábul	...	4,088
Sindi	...	2	Miscellaneous trees	...	220

The total number last year was 6,499. 23 bábul trees were blown down by the wind.

(19).—MATOBA TANK.

1. The water in the tank, which is supplemented by the surplus water from the Mutha Canal, stood at the opening of the year 1st April 1892 at 12.45 feet above the sill of the outlet. The water level then fell continuously until 3rd June when the level was 4.34 feet above the sill of sluices. On 4th June 1892 storms of rain began to replenish the tank and it was finally filled to a height of 29.20 feet above the sill on 1st September and remained so up to the end of January 1893, and then fell and reached the level of 25.25 on 31st March 1893, or 12.73 higher than the level of the previous year.

2. The area irrigated from this tank during the year was 885 acres, of which 684 were kharif and 201 rabi. The total shows a decrease of 1,115 acres as compared with the previous year, or 56 per cent., which is due to short supply of water in the tank at the beginning of the kharif season and to the favourable rainfall at the end of the kharif and during the rabi seasons.

Area irrigated and assessments.

The assessments of water-rates amounted to Rs. 6,249 and the miscellaneous revenue to Rs. 110, making a total of Rs. 6,359 against Rs. 13,273 in the previous year, or a decrease of 52 per cent. The incidence of water-rates was Rs. 7.06 per acre irrigated against Rs. 6.54 in the previous year. The decrease in water-rate assessment was due to decrease in the irrigated area.

3. The areas irrigated were ascertained by actual measurements, most of which were taken by measurers specially entertained for the purpose and the remainder by an Inspector in the intervals of his regular work. The total cost of measurements was Rs. 67 or 1 anna and 3 pies per acre as compared with 9 pies in the previous year.

4. The working expenses amounted to Rs. 2,549 which represented a rate per mile of canal in operation of Rs. 149.94, or 2.88 per acre irrigated.

5. The highest duty of water during the month in which no rainfall was obtained in May 1892 when the area irrigated was 412 acres and the average discharge 2.55 cubic feet per second, giving a duty of 161.57 acres per cubic foot per second. The lowest duty in the dry season was in February 1893 when the area irrigated was 348 acres and the average discharge 6.40 cubic feet per second, giving a duty of 54.38 cubic feet per second.

6. The following is the comparison of areas irrigated and applied for:—

AREAS APPLIED FOR.			AREAS IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
893	303	1,196	684	201	885	...	...	209	102

The decrease is due to the people having sent in applications before rain fell. The crops then required no water from the tank.

7. The number of trees on this tank was 16,738, the principal trees being babul 16,423 in number.

(20).—KASURDI TANK.

1. The tank was empty on 1st April and remained so till 3rd June; it was replenished on the 4th June when the level was 224.20 or 16.70 above the sill of outlet. The storage was drawn upon from the 5th June and the water level fell to R. L. 220.50 on 20th September 1892 and again replenished on 22nd September when the level was 225.30 feet or 17.80 feet above the sill of sluice. The storage was again drawn upon from 23rd September and the water level fell to R. L. 220.70 on the 31st March 1893.

2. The area irrigated was 31 acres of kharif and 70 of rabi crops, or 101 acres in all; the total shows a decrease of 39 acres as compared with the previous year, or 28 per cent., due to favourable and copious rainfall. The bed of the tank was not utilised for the cultivation of melons as there was water in the tank.

3. The assessment amounted to Rs. 267, of which Rs. 235 were on account of water-rates and Rs. 32 for miscellaneous revenue.

4. The areas irrigated were ascertained by actual measurements by measurers specially entertained for the purpose, and from 9 to 12 per cent. were checked by the subordinate in charge. The cost of measurements amounted to Rs. 9, or at the rate of 1 anna and 5 pies per acre against 10 pies in the previous year. The working expenses amounted to Rs. 276, which represents a rate per mile of canal in operation of Rs. 157.71, or 2.73 per acre irrigated.

5. The following is the comparison of areas irrigated and applied for :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
76	72	148	31	70	101	..	...	45	2

The decrease is due to the people having sent in applications before rain fell; the crops then required no water from the tank. There were 1,244 trees on this tank, of which 1,234 were babul.

(21).—SHIRSUPHAL TANK.

1. At the commencement of the year the water in tank stood at 14.65 feet above the sill of the outlet sluice, that is, 12.25 feet lower than at the corresponding period of the previous year. The tank received its first replenishment on 4th June and then gradually filled to a level of 91.85 or 31.85 above the sill of outlet on 25th October 1892, which was the maximum height reached by the water. At the close of the year the water level was 25.84 above outlet sill or 11.11 feet higher than on the corresponding date of the previous year.

2. The areas irrigated were 374 acres of kharif and 412 acres of rabi crops, or a total of 786 against 963 acres in the previous year. The decrease is due to favourable and copious rainfall.

3. The assessment amounted to Rs. 3,187, of which Rs. 3,071 were on account of water-rates and Rs. 116 for miscellaneous revenue.

4. The areas irrigated were measured by measurers specially entertained for the purpose and partly by an Inspector when time could be spared from his ordinary work, and the measurements were checked as usual by the subordinate in charge. The cost was Rs. 58, or 1 anna and 2 pies per acre against 7 pies in the previous year.

5. The working expenses amounted to Rs. 4,740, which represents a rate for maintenance per mile of canal in operation of Rs. 379.20 and Rs. 6.03 per acre irrigated. The increase in working expenses as compared with the previous year was due to extra expenditure incurred on earthwork in connection with slips in the dam slope.

6. The highest duty of water in the month during which no rain fell was obtained in April 1892 when the area irrigated was 231 acres and the average discharge 3.30 cubic feet per second, giving a duty of 70 acres per cubic foot per second. The lowest duty in the dry season was in February 1893 when the area irrigated was 131 acres and the average discharge 10.27 cubic feet per second, giving a duty of 12.75 acres per cubic foot per second.

The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality. No useful information of the kind can be obtained for the rainy season, the canal being single-banked.

7. The following is the comparison of areas irrigated and applied for :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
774	140	914	374	412	786	...	272	400	...

The decrease is due to the people having sent in applications before rain fell; the crops then required no water from the tank.

8. The number of trees on this tank was 10,031, of which 8,623 were bābul and the rest miscellaneous trees.

9. To ascertain the loss by evaporation and leakage during the year gaugings were taken for broken periods during the months of April, May, June, November, December, January, February and March, or a total number of days 190. During this period the loss amounted to 113,826,536 cubic feet, or rather less than $\frac{1}{3}$ rd of the total capacity of the tank above outlet level.

(22).—BHĀDALVĀDI TANK.

1. At the commencement of the year, the water in the tank stood at 18·21 feet above the outlet sluice, that is, 6·99 feet lower than at the corresponding date of the previous year, and fell to a level of 11·10 feet above the sill of sluice on 3rd June 1892 when it was gradually replenished and reached the maximum height on the 25th October 1892, or 37·00 feet above the sill of outlet. It then gradually fell, and at the close of the year was 31·32 feet, or 13·02 higher than on the corresponding date of the previous year.

2. The areas irrigated were 483 acres of kharif and 187 acres of rabi, making a total of 670 acres against 848 acres in the previous year. The decrease was due to favourable and copious rainfall of the year. The assessments of water-rates amounted to Rs. 3,290 and the miscellaneous revenue to Rs. 96, making a total of Rs. 3,386 against Rs. 4,180 in the previous year.

3. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an Inspector when time could be spared from his ordinary work. The total cost of measurements was Rs. 42, or 1 anna per acre against 11 pies in the previous year.

4. The working expenses amounted to Rs. 3,386, which represents a rate of Rs. 347·28 per mile of canal in operation and Rs. 5·05 per acre irrigated.

5. The highest duty of water obtained during the year was in December 1892 when the area irrigated was 425 acres and the average discharge was 4·92 cubic feet per second, giving a duty of 86·38 acres per cubic foot per second. The lowest duty in the year was in February 1893 when the area was 282 acres and the average discharge 7·08 cubic feet per second, giving a duty of 39·83 acres per cubic foot per second.

The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

6. The following is the comparison of areas irrigated and applied for:—

AREA APPLIED FOR.			AREA IRRIGATED.			More.		Less.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
543	293	836	483	187	670	...	...	60	106

The decrease is due to the people having sent in applications before rain fell. The crops then required no water from the tank.

7. Refund of Rs. 3 was made for the short supply of water during the year.

8. The number of trees on this tank was 7,736, of which 6,811 were bābul and 768 bambū.

9. To ascertain the loss by evaporation and leakage during the year gaugings were taken for broken periods during April, May, June, July, August, October, December, January, February and March 1893, or a total number of days 215. During this period loss amounted to 21,175,639 cubic feet, or rather more than $\frac{1}{4}$ th of the total capacity of the tank above outlet level.

(23).—KOREGAON TANK.

The rainfall for the year under report was 46.08 inches (kharif 38.60 and rabi 7.46) against 23.62 inches (kharif 23.93 and rabi 0.69) in the previous year.

2. The area irrigated during the year was 302 acres (kharif 47 and rabi 255). There was a trifling difference between the area applied for and actually irrigated. The area applied for being 293 acres, *i.e.*, 9 acres less.

The assesment on account of water-rates amounted to Rs. 769. The gross assessed revenue from all sources being Rs. 779 and the net revenue minus Rs. 308 (Rs. 779—Rs. 1,087 working expenses).

Comparison with irrigation of previous years.

3. The following statement gives a comparison with five previous years:—

Year.	Kharif.	Rabi.	Total.	Water-rate assessed.
	Acres.	Acres.	Acres.	Rs.
1887-88	53	222	275	727
1888-89	151	79	230	714
1889-90	13	323	336	743
1890-91	121	99	220	590
1891-92	68	363	429	1,061
1892-93	47	255	302	769

4. The decrease is due to timely rainfall and to the fact that there was not sufficient water in the tank at the beginning of the kharif season. To the former cause the decrease of 108 acres in rabi is due, while to the latter the decrease of 19 acres in kharif is due, when there would otherwise have been an increase. The soil under command is excellent and there would have been an increase in the hot weather and perennial crops.

5. The rainfall over the 4.4 square miles catchment area amounted to 44.96 inches between the 1st June and 31st October. The tank supply. The lowest R. L. of the water in the tank was 80.10 or 0.10 feet above the canal sluice on the 27th May. The rains then commenced. On the 19th August the waste weir (R. L. 96 or 16 feet above the sluice) began to flow. Allowing for the canal discharge, and omitting only the evaporation and absorption over the tank area, this represents a run-off the catchment area of 0.41, the rainfall during this period, *i.e.*, 27th May to 19th August 1892, being 26.78 inches. The tank continued to be well replenished and was at full supply on the 24th November 1892. The maximum height R. L. 97.02 was reached on 27th October 1892. On the 31st March 1893 the R. L. was 91.50 or 11.50 feet above the sluice. The supply was therefore insufficient only till the commencement of the rains of 1892, after which it was abundant.

6. The following gives the average monthly discharge of the canal at the head:—

Canal discharge.	1892	Discharge C. ft. per second.
April	0.89	
May	0.24	
June	0.90	
July	0.50	
August	0.50	
September	0.00	
October	0.00	
November	0.00	
December	2.15	
January 1893	0.49	
February	0.62	
March	0.51	

7. The remarks on the duty of water given in paragraph 7. of the report on the Mhasvad Tank apply here. As shown in Statement I—E, the duty for kharif crops is 79·66 and rabi 327. The extraordinary high duty for the rabi crops is due to the canal water being taken at first and afterwards not being required on account of rainfall.

8. The working expenses, including indirect charges, amounted to Rs. 1,037. The cost on 'Maintenance and Repairs' was Rs. 363, of which Rs. 77 were on account of the dam; thus the expenditure on the canals comes to Rs. 286, or Rs. 76 per mile of canal.

9. The area irrigated was measured at a cost of Rs. 120, or, Re. 0·64 per acre. The heavy charge is due to the smallness of the area irrigated when compared with the establishment it is necessary to keep up. Some changes in the system of measurement and its supervision are being introduced by which it is hoped to reduce the expenditure under this head.

10. The tank has hitherto formed part of the Ashti Tank Sub-Division. The distance from the latter is some 50 miles. The Koregaon Tank lies near Bārsi and is now being placed in charge of the Bārsi Sub-Divisional Officer, and it is hoped by strict supervision to conserve the supply in the hot weather sufficiently to encourage the increase of perennial crops.

(24).—ASHTI TANK.

The rainfall for the year under report gauged on the line of canals was 39·15 inches (kharif 29·35, rabi 9·80). In the previous year it was 18·20 (kharif 14·15, rabi 4·05). The rainfall was seasonable as well as plentiful.

2. The area irrigated during the year was 1,114 acres, of which 677 were kharif and 437 rabi crops. The area irrigated was the same as applied for, i.e., 1,121 acres (689 kharif and 432 rabi). The land under command is divided into small irrigation numbers and so the cultivators cannot very well increase the irrigated area without a fresh application.

The assessment on account of water rates amounted to Rs. 4,176.

The gross assessed revenue from all sources being Rs. 4,687 and the net revenue minus Rs. 2,841 (Rs. 4,637—7,523 working expenses).

3. The following statement gives a comparison with the last five years:—

Years.	Kharif.	Rabi.	Total.	Water-rates.	Gross Revenue.	Working Expenses.	Net Revenue.
	Acres.	Acres.	Acres.				
1887-88...	585	373	958	2,091	2,299	7,148	4,849
1888-89...	980	1,437	2,417	4,598	4,990	7,981	2,991
1889-90...	829	618	1,447	4,523	5,068	5,774	706
1890-91...	576	548	1,124	3,284	4,294	5,151	857
1891-92...	559	1,143	1,702	4,610	6,200	5,333	867
1892-03...	677	437	1,114	4,176	4,687	7,523	2,841

4. There was a decrease of 706 acres in rabi and an increase of 118 acres in kharif. The former was principally in the jowari crop on account of the favourable rainfall and the latter was due to an increase in the hot weather fodder crops.

Causes of variation explained.

The revenue from sources other than water-rates is this year only Rs. 511. This was for the sale of land let for cultivation and grazing purposes and sales of aloe plant produce: but there was no sale of trees this year, which accounts for the decrease of Rs. 1,079 on last year's revenue from these sources. The sale of trees alone last year realized Rs. 1,090. The sale was postponed during the year under report as the offers were too low and the wood, it was thought, might be utilized in connection with the proposed bridge over the Bhima at Pandharpur. The plantations are in a promising condition as the soil is favourable and a good revenue may be expected from them. There is a fine forest of bābul trees behind the dam as well as on the tank contour, and the trees along the canals are doing well. The number of large trees of all kinds is 34,870 and of those below 5 feet is 14,680, besides a large number of smaller trees. The expenditure incurred on plantations amounted to Rs. 265.

5. The rainfall over the 92 square miles catchment area was gauged in two places and the average was 35.59 inches. The Tank supply between the 1st June and 31st October. The lowest R. L. of the water in the tank was 222.30, or 12.30 feet above the canal sluices on the 27th May 1892. The rains then commenced, and on the 24th June 1892 the waste weir cut (R. L. 228.60 or 18.60' above sluices) began to flow. Allowing for canal discharge and omitting only the evaporation and absorption over the tank area, this represents a run-off the catchment area of 0.231, the rainfall during this period, i.e., 27th May to 24th June 1892, the average of two stations, amounting to 10.10 inches. The maximum height, R. L. 233.60, was reached on the 29th October. The waste weir was flowing continuously up to the 6th December when the cut was closed by a temporary earthen dam. On the 31st March the tank level stood at R. L. 227.95 or 17.95 feet above the sluices. There was, therefore, an abundant water-supply.

6. The following shows the average monthly discharge of the canal at the head:—

DISCHARGE IN CUBIC FEET PER SECOND.			
	Left Bank Canal.	Right Bank Canal.	Total.
April 1892.,	6.02	1.81	7.83
May " "	6.35	2.32	8.67
June " "	2.40	0.67	3.07
July " "	5.04	1.75	6.79
August " "	2.06	0.64	2.70
September " "	1.71	0.40	2.11
October " "	3.91	0.92	4.83
November " "	4.80	1.15	5.95
December " "	7.63	2.65	10.28
January 1893	7.67	2.14	9.81
February " "	7.14	2.50	9.64
March " "	8.20	2.26	10.46

7. The remarks on the duty given in paragraph 7 of the

Mhasvad tank apply here. As shown in Statement
 Duty of water. I.—E, the duty for kharif crops is 108.84 and rabi 58.73. The gauge observations for determining the duty for certain crops by experiments, have, it is found, been taken incorrectly through misunderstanding and are therefore valueless. This will be rectified another year.

8. The working expenses, including indirect charges, amounted to Rs. 7,528. The item "maintenance and repairs" Working expenses. amounted to Rs. 2,779, of which Rs. 720 were on account of the dam. Thus the expenditure on the canals amounted to Rs. 2,059,

representing Rs. 70 per mile of canal—an improvement on last year's Rs. 91 per mile, due to the reduction of expenditure to an extremely low limit. There is a constant and ever increasing growth of weeds requiring frequent removal. The chief causes of this nuisance is the extremely low velocity of discharge of the canals which run chiefly through black soil.

9. Apart from the expenses incurred in the weed clearance, the frequent closure of the canal for the purpose is in every way objectionable. Also the canals are getting permanently choked up, the above-mentioned clearance being only of a temporary and incomplete nature. Not only do the roots remain in, but the silt, in which the weeds more particularly flourish, remains behind. The growth increases with the sun light and heat, till in the hot weather the water can hardly be got to flow at all. The left Bank Canal is estimated to discharge 30 cubic feet; but, even in the monsoon (when the weeds grow but little) it can only pass 10 cubic feet. The right bank similarly is estimated to discharge 10 cubic feet but can only pass 5 cubic feet. If, as is hoped, the demand for water increases, or there is a famine year, the expansion of irrigation will be impossible. It is therefore strongly recommended that in the case of such weed growing canals, the experiment be tried of giving the whole canal a good scraping (of 2" or 3" silt containing the roots) every year during the rabi season. There would be no weeds for many months after, and in the long run the expense incurred will be repaid.

10. The chief causes of the poor progress in irrigation is, first, the extreme poverty of the cultivators here, and second, the scarcity of manure. The people are only just beginning to recover from the great famine of 1876.

Revenue prospects.
The slow progress.
Causes and remedies discussed.

The land at that time was deserted by many of the people and denuded of cattle. The people have returned, but the cattle have remained scarce ever since and so, therefore, the manure.

Poverty of the cultivators.

The cost of the latter has been steadily increasing and from being 4 annas a cart a few years ago, is one rupee a cart now, or an increase of fourfold.

Scarcity of manure.
Causes.

Jowari is the chief crop here and it is a fact that if manure is not used, the crop is not so good as one grown by rain in an ordinary year. And more than this, if the rain comes after a canal watering, the crop is ruined. The grain turns black and small. A gram crop indeed will have, under these circumstances, no grain at all. It must be remembered that the case of these crops differs from that of ground-nut or rice, say, when the land is properly prepared for irrigation: The water is taken for the jowari or gram after the crop has grown up, the ground is not prepared, therefore, and the amount taken cannot be regulated. Then if rain comes, the deep clay soil of these parts becomes super-saturated. It is often supposed that the cultivator is foolish not to use irrigation; but this explanation shows he has good reasons.

Objections to irrigation of rabi crops without manure.

The land under command would, by the ordinary observer, be put down as chiefly consisting of rich black cotton soil. Half of this, however, consists of black kural. There is also some red kural. All these soils require manure when irrigated, but specially the kural soil. The black kural only contains a small proportion of salt as compared with the red, but it is sufficient to necessitate extra manure. The soil that requires the least manure is a soil mixed with silt found near the Bhima river and called murrul. There is very little of the latter under command. It requires about half the manure of black soil and one-third that of kural.

Character of the different kinds of soil.

Perennial crops, such as sugarcane, grow well in both the black cotton and black kural earth; but as the quantity of manure required is large, the area cultivated is limited. It is not only that the people are poor; speculators

Perennial crops limited by manure available.

from Poonā have tried to grow sugarcane here and found it not pay on account of the scarcity of manure.

One cause of the land not being improved may be explained as follows:—
 The practice, here, of one-year leases is inimical to irrigation. On account of their poverty the cultivators sublet their land. This they do for one year only, as a rule to avoid certain difficulties which they experience in recovering their land again when the lease is given for more than a year and bond is taken. The lessee having the land for such a short period only, does not attempt to improve it. The manure available is seldom properly ripened, with the result that it is not the first year of its deposit in the land that the crops reap the benefit. Naturally, therefore, the lessee is chary of manure. And there is some expense, too, in preparing the land for irrigation and bringing the water on to it, that a one-year lessee does not care to incur. The cultivators would be willing to give their land on long lease if there was not the abovementioned difficulty about its recovery at the end of the lease. A remedy for the evil complained of should be possible and the matter is recommended to the notice of Government in the Revenue Department. There is yet another obstacle in the way of the would-be cultivator by irrigation which can easily be removed.

The fields have been sub-divided into irrigation numbers, the least area for jirayat being 2 acres and bagayat 1 acre. The knowledge, that if a fraction of an irrigation number is irrigated a charge will be made for the whole, acts as a check on the use of irrigation at all. Also the poverty of the cultivators only allows them to attempt very small areas of bagayat. Again a man sub-divides his field among his sons, and though one of them may wish to irrigate, the others do not, with the result that none of the field is irrigated. It would appear, therefore, that the restrictions involved by the irrigation number system might very advantageously be modified at least for a period of years.

On the other hand the fact that a large outlay has been incurred in making out these irrigation numbers, and that there are no charges incurred for measuring the crops, will require due consideration in this connection and further subdivision allowed with caution.

11. The progress of irrigation on a work of this description must necessarily be slow. Started as a famine work in a famine district, the return on the Capital outlay must be chiefly an indirect one. The occupants of the land originally wretchedly poor are further impoverished by famine and take years to recover. They are absolutely ignorant, too, of cultivation by irrigation. On these works then the supervision of specially experienced subordinates is required for encouraging the irrigation; but unfortunately the amalgamation of the Roads Branch often necessitated the employment of subordinates that are neither interested nor experienced.

On the lands under command of irrigation works there is undoubtedly a good field for the Agricultural Department and it is suggested that the Director of Agriculture be addressed to bring the matter before the next Agricultural Conference.

(25).—REWARI CANAL.

An expenditure of Rs. 381 was incurred on additions and alterations to the head sluice of the canal and constructing modules.

2. The rainfall during the year was 31.72 inches (kharif 22.78 and rabi 8.94), against 22.42 inches in the previous year. The average for the previous 10 years was 30.51 inches for the two seasons.

3. The area irrigated during the year under report compares with the previous four years as follows:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1888-89	225	775	1,000
1889-90	192	1,033	1,225
1890-91	205	822	1,027
1891-92	229	608	837
1892-93	91	920	1,011

There is a decrease of 138 acres in the kharif and an increase of 512 acres in the rabi season on the areas of the last year. The reason of this is due to the deficient rainfall in 1891-92 on account of which a large number of applications for water for perennial crops were rejected at the commencement of the season, when the discharge in the river was very low, and the perennial irrigation was restricted to the crops alongside the canal in the first four miles only; the lands ordinarily kept for this class of crop on the rest of the canal were sown with low-rated crops in the rabi season such as 'shālu', wheat, &c., for which there was then a sufficient supply of water.

4. The area irrigated was 27 per cent. of that under command of the canal and 11 per cent. in excess of that applied for.

5. The assessment as compared with previous years was as follows:—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1888-89	2,143	1,743	3,886
1889-90	1,391	3,266	4,657
1890-91	2,172	2,326	4,998
1891-92	2,591	2,228	4,819
1892-93	1,510	2,733	4,243

Remissions of Rs. 30 were granted in the kharif season and Rs. 16 in the rabi season; these remissions are of a permanent nature—*vide* Government Resolution No. 3610, dated 23rd August 1865. The decrease in the kharif assessment and increase in the rabi was due to the decrease in the area of perennial crops, as stated in paragraph 3 above. Revenue from other sources was Rs. 199, bringing the gross revenue to Rs. 4,396.

6. The average water-rate and cost of measurements as compared with the previous years was as under:—

Years.	Area Irrigated.	Average Incidence of Water-rate per Acre.	COST OF MEASUREMENT.	
			Total Cost.	Per Acre.
	Acres.	Rs.	Rs.	Rs. a. p.
1889-90	1,225	3-8	206	0 2 8
1890-91	1,027	4-8	191	0 2 11
1891-92	837	5-76	160	0 3 0
1892-93	1,011	4-15	181	0 2 9

7. The working expenses, including direct and indirect charges, amounted to Rs. 1,721 against Rs. 1,939 in the previous year, and are 39 per cent. on the gross revenue, against 40 per cent. of the year before. The rate per mile of canal was Rs. 344 against Rs. 388 for the previous year. The rate per acre irrigated was Re. 1-70 against Rs. 2-32 in the previous year.

8. The average duty of water obtained was for kharif season 25 acres per cubic foot per second and that for rabi 99.

9. The operations of the year show a net profit of Rs. 2,675, or 4.73 per cent. on the direct Capital outlay of Rs. 56,522.

(26).—UPPER MAN RIVER WORKS.

No expenditure was incurred on the Capital Account of this canal.

2. The rainfall of the year as gauged at Gondwla was 29.75 inches (kharif 19.01 and rabi 10.74), against 11.49 inches in 1891-92, the average of the previous 10 years being 20.26 inches for the two seasons.

3. The area irrigated during the year compared with the previous four years was as follows:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1888-89	746	634	1,380
1889-90	743	688	1,431
1890-91	954	416	1,370
1891-92	858	533	1,391
1892-93	611	428	1,039

The decrease in the areas for both the seasons, kharif as well as rabi, is due to the favourable and seasonable rainfall in 1892, and the late replenishment of the Pingli Tank in 1892-93 and the deficient rainfall in 1891-92 which left the tank practically dry.

4. The area irrigated was 14 per cent. of the area under command of the canal and 5 per cent. in excess of that applied for.

5. The water-rate assessment during the year amounted to Rs. 3,019, and compared with that of the previous four years as follows:—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1888-89	3,124	1,707	4,831
1889-90	3,945	2,470	6,415
1890-91	4,609	1,247	5,856
1891-92	2,640	1,662	4,302
1892-93	1,434	1,585	3,019

The decrease in the assessments of both the seasons is due to the deficient rainfall in 1891-92 and the favourable and seasonable rainfall in 1892-93 as per paragraph 3.

6. The average water-rate and cost of measurement as compared with the previous three years was as under:—

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.	
			Total Cost.	Per Acre.
	Acres.	Rs.	Rs.	Rs. a. p.
1889-90	1,431	4.5	210	0 2 4
1890-91	1,370	4.27	123	0 1 5
1891-92	1,391	3.09	109	0 1 3
1892-93	1,039	2.90	303	0 4 8

7. The working expenses, including direct and indirect charges, amounted to Rs. 4,140 against Rs. 5,342 of the previous year, showing a decrease of Rs. 1,202. The rate per mile of canal was Rs. $172\frac{1}{2}$ and 3.98 per acre irrigated. The expenses amount to Rs. 131 per cent. on the gross revenue.

8. The average duty of water obtained was for kharif 91 acres per cubic foot per second and for rabi 27.

9. On the first of April the level of water in the Pingli Tank was R. L. 2,343.82, or 1.73 feet above the sill of sluice. The supply in the tank began to improve from 28th May, on which date the level of water rose to 7.09 above sill. The highest point reached during the year was on 2nd November, when the R.L. was 2,371.12, or 29.03 feet above sill of sluice, *i.e.*, 0.03 feet above the top of waste weir. On the 31st March 1893 the level of water was R. L. 2,364.80.

(27).—YERLA RIVER IRRIGATION WORKS.

The work of re-constructing a portion of Nehr Tank dam for securing the future safety of the dam and of modules were in progress. The expenditure incurred was Rs. 4,457.

2. The rainfall of the year was 38.45 inches (kharif 27.09 and rabi 11.36) against 19.93 in the year before and 30.05 the average of the past 10 years for the two seasons.

3. The area irrigated compared with the previous four years is as follows:—

				Kharif.	Rabi.	Total.
				Acres.	Acres.	Acres.
1888-89	...	...	...	691	972	1,663
1889-90	...	...	...	774	1,150	1,924
1890-91	...	...	...	895	919	1,814
1891-92	...	...	...	915	1,332	2,247
1892-93	...	...	...	565	1,266	1,831

The decrease in the areas of both the kharif and rabi seasons was due to the scanty rainfall in the previous year and the favourable and seasonable rainfall during the year under report. During the hot season there was no replenishment of the tank worth considering, and accordingly many applications for water for the perennial and hot weather crops had to be rejected. The area irrigated was 17 per cent. of that under command of the canal and 6 per cent. in excess of that for which applications were received.

4. The water-rate assessment as compared with those of the previous year was as follows:—

				Kharif.	Rabi.	Total.
				Rs.	Rs.	Rs.
1888-89	...	...	...	3,871	2,568	6,439
1889-90	...	...	...	4,716	3,511	8,227
1890-91	...	...	...	5,171	3,307	8,478
1891-92	...	...	...	5,624	3,832	9,456
1892-93	...	...	...	2,686	3,695	6,381

The decrease is due to the reasons stated in paragraph 3. Remissions to the extent of Rs. 6 were granted; this item is permanent, as sanctioned in Government Resolution No. 107 W. I.—327 of 22nd August 1877. The revenue from other sources was Rs. 772 and the gross revenue Rs. 7,147.

5. The average water-rate and cost of measurement as compared with previous years was :—

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENTS.	
			Total Cost.	Per Acre.
				Rs. a. p.
1889-90	1,924	4.3	...	.....
1890-91	1,814	4.6	276	0 2 5
1891-92	2,247	4.21	303	0 2 2
1892-93	1,831	3.48	466	0 4 1

6. The working expenses, including direct and indirect charges, amounted to Rs. 6,406, which represents a cost of Rs. 200 per mile of canal open and Rs. 3.49 per acre irrigated against 2.87 per acre in the previous year. The expenses amounted to 90 per cent. on the gross revenue.

7. The gross assessed revenue was Rs. 7,147, and the total working expenses amounted to Rs. 6,406. The operations of the year, therefore, show a net profit of Rs. 741, or 0.12 per cent. on the direct Capital outlay of Rs. 6,20,533.

8. The average duty of water obtained was for kharif 40 acres per cubic foot per second and for rabi 34.

9. On the 1st April the Nehr Tank was practically dry. The first replenishment of any importance that came was on the 5th of June, i.e., after the sowing season of the perennial and the hot weather crops was nearly over. The water level continued rising till it reached R. L. 2,658.41, i.e., 24.39 feet above sill of sluice, on 27th August 1892. On 31st March 1893 the level of water in the tank was 2,634.80, or 30.20 feet below the crest of the waste weir.

(28).—CHIKHLI CANAL.

The Capital Account of this canal is closed.

2. The rainfall of the year was 29.49 inches (kharif 18.12 and rabi 11.37) against 16.17 inches in 1891-92 and 23.89 inches, the average of the past 10 years for the same two seasons.

3. The area irrigated during the year under report as compared with the previous four years was :—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1888-89	...	...	231	77	408
1889-90	...	...	312	101	413
1890-91	...	...	322	85	407
1891-92	...	...	375	19	394
1892-93	...	...	191	78	269

The decrease in the kharif area is due to the scanty rainfall in 1891-92, on account of which the river was very low in the hot season of 1892 and many applications for the perennial and hot weather crops had to be rejected till the end of May 1892.

The area irrigated was 18 per cent. of the irrigable area under command of the canal and 50 per cent. less than that for which applications were received. The reason of this is that the rains during the year under report were favourable to the crops and, therefore, no canal water was required even for crops for which applications were received.

The water-rate assessments were as under:—

			Kharif.	Rabi.	Total.
			Rs.	Rs.	Rs.
1888-89	...	...	1,225	201	1,426
1889-90	...	...	1,198	334	1,532
1890-91	...	...	1,485	359	1,844
1891-92	...	...	1,546	71	1,617
1892-93	...	...	945	307	1,252

The decrease in the kharif season was due to the insufficient supply of water in the river in the hot season.

5. Revenue from other sources was Rs. 31 and the gross revenue amounted to Rs. 1,283.

6. The working expenses, including direct and indirect charges, were Rs. 828 against Rs. 784 during the previous year. The expenses amounted to 65 per cent. on the gross revenue and Rs. 127 per mile of canal open and 3·08 per acre irrigated.

7. The average water-rate and cost of measurement as compared with previous years was:—

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.	
			Total Cost.	Per Acre.
				Rs. a. p.
1889-90	...	...	312	3 7 36
1890-91	...	...	322	4 53 35
1891-92	...	...	375	4 10 Nil.
1892-93	...	...	269	4 65 62

8. The average duty of water obtained was for the kharif season 75 acres per cubic foot per second and that for the rabi 11.

9. The operations of the year show a net profit of Rs. 455, or 0·85 per cent. on the direct Capital outlay of Rs. 53,803.

(29).—MAINI TANK CANAL.

No expenditure was incurred on the Capital Account of this canal.

2. The rainfall of the year as gauged at Maini was 36·13 inches (kharif 23·45 and rabi 12·68) against 13·37 inches of the previous year and 23·40 inches, the average of the past ten years for the two seasons.

3. The area irrigated during the year as compared with the last four years was:—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1888-89	...	...	1,306	581	1,887
1889-90	...	...	1,326	449	1,775
1890-91	...	...	1,308	418	1,726
1891-92	...	...	1,155	532	1,687
1892-93	...	...	685	416	1,101

The decrease in the kharif area was due to the deficient supply in the tank in the hot weather, on account of which all applications for the high-rated crops, i.e., the perennial and the hot weather crops, had to be rejected. The decrease in the rabi was due to the favourable rains in 1892.

4. The area irrigated was 24 per cent. of the irrigable area under command of the canal and 23 per cent. in excess of that applied for.

5. The amount of water-rate assessment was Rs. 4,910 and compares with that of the four previous years as follows :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1888-89	4,526	1,524	6,050
1889-90	5,904	1,614	7,518
1890-91	6,212	1,623	7,835
1891-92	6,450	1,539	7,989
1892-93	2,842	2,068	4,910

The decrease is due to the deficient supply in the Maini Tank at the beginning of the year and the seasonable rainfall later during the year under report.

6. The revenue from other sources amounted to Rs. 239 and the gross revenue amounted to Rs. 5,149.

7. The working expenses, including direct and indirect charges, amounted to Rs. 2,957 against Rs. 5,943 for the previous year, or Rs. 185 per mile for canal open, Rs. 2·68 per acre irrigated, and about 57 per cent. of the gross revenue.

8. The average water-rate and cost of measurement as compared with previous years was as under :—

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENTS.	
			Total Cost.	Per Acre.
			Rs.	Rs. a. p.
1889-90	1,775	4·20	247	0 2 3
1890-91	1,726	4·50	238	0 2 2
1891-92	1,687	4·74	237	0 2 3
1892-93	1,101	4·46	419	0 6 1

9. The operations of the year show a net profit of Rs. 2,192 or Re. 0·51 per cent. on the direct Capital outlay of Rs. 3,67,671.

10. The average duty of water obtained for the kharif season was 308 acres per cubic foot per second and for the rabi season 69.

11. On 1st April 1892 the level of water in the Maini Tank was 2284·56, or 15·24 feet above sill of sluice. This depth was only nominal, as the silt in the tank was 12 feet in depth and the actual depth of water was 2·5 feet only. On 30th May the level was 2303·56, or 3 feet above the crest of waste weir ; on 31st March the level was at 2298·01.

(30).—MUCHKUNDI TANK.

The rainfall of the year compared with that of the previous year was as under :—

	1891-92.	1892-93.
Kharif	9·52	22·81
Rabi	1·18	11·40
Total	10·70	34·21

The average for the past eight years was 23·30.

2. The area irrigated during the year as compared with the preceding years was:—

		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
1890-91	... ..	10	1	11
1891-92	... ..	6	199	205
1892-93	... ..	3	...	3

showing a very large decrease. The previous year was a remarkable one in the history of the tank owing to the failure of later rains.

3. The assessed crop revenue during the year was only Rs. 25 and the revenue from other sources (sale of *tarwad* plant in the bed of tank) realized Rs. 15, bringing the gross revenue of the year to Rs. 40 as compared with Rs. 540 of the preceding year. The working expenses of the year were Rs. 392, so that the tank worked at a loss of Rs. 352.

4. On the 1st April 1892 the water in the tank stood at 1·38 below the sill of sluice, or 4·18 feet lower than at the corresponding period of the previous year. The tank continued to fall till the 3rd June when it received its first replenishment.

The principal replenishments occurred on the 28th, 29th and 30th October when it received no less than 138·915 millions of cubic feet in 3 days, the highest replenishment occurring on the 30th as shown by the gauge on the 31st. A slight further replenishment was received on the 31st bringing the water level up to R. L. 1,803·24, or 17·30 feet above the sill of sluice. This is the greatest height to which the tank was filled since its construction. The contents above sill of sluice then amounted to 367 million cubic feet, being about half the total capacity of the tank, which is 681 millions cubic feet.

(31).—NILGUND TANK.

This is an ancient work which had fallen out of use from its not holding much water, owing to leakage. Some small irrigation was carried on from the moisture and the percolation from it. Its restoration was effected in 1882-83. The direct leakage being stopped and the work repaired generally. As the old dam was high, raising the waste weir level so as to increase the capacity considerably was feasible at a very slight cost, this was also done. The "rayats" however, for whose benefit the work was done, failed to keep their promise to pay water rates though they reaped considerable benefit from the rise of the water in their irrigation wells, so that no revenue has as yet been obtained from the work done, nor from the great improvements made. Complaints having been made that land and crops were being swamped by the extra level of the escape, Government in October 1892 ordered the level to be reduced to that which originally obtained. Since this latter work was done, the water has not risen up to the old level, so no result of this reduction of the escape can be reported. Investigations are being made concerning the conflicting claims of the people above the dam and those below, which may possibly lead to some small revenue from the improvements made.

(32).—GADIKERI TANK.

The management of the tank is under the control of the Revenue Department.

2. The area irrigated by the tank was 337 acres and the irrigation share of the consolidated revenue collected in the Civil Department amounted to Rs. 1,987, and the revenue derived from plantations was Rs. 50.

(33).—DÁMBAL TANK.

The rainfall of the year during kharif and rabi seasons was 18·44 inches, that for the previous year, which was one of very deficient rainfall, being 6·19 inches, and the average of the previous 10 years, 19·14 inches.

2. The tank not having more than half filled during the previous year, became dry about the 5th January and remained so until replenishment commenced on 7th April; the water level then steadily rose until on the 4th June it was within 2 feet of the waste weir crest which, however, it did not overtop until the 30th October.

3. The area irrigated, the assessments, working expenses, average water-rate as compared with the two previous years were:—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		
1890-91... ..	177	497	36	139	213	636	2.99	717
1891-92... ..	17	17	146	308	163	325	1.99	612
1892-93... ..	261	272	54	115	315	387	1.23	571

The above table shows that there was an increase of 2.44 acres under kharif and a decrease of 92 acres under rabi, or a net increase on the whole of 152 acres. In addition to the above there were irrigated 97 acres under the old irrigation or consolidated rates.

4. The water assessments of the year amounted to, under crop rates, Rs. 387, and under the consolidated assessment, Rs. 666, making a total of Rs. 1,053.

5. The average water-rate under the new irrigation or crop rates was Rs. 1.23 per acre; while the water-rate of the consolidated assessment under the old irrigation was Rs. 6.86 per acre.

6. In addition to the revenue from water-rates, a sum of Rs. 379 was realised by the sale of grass, trees, &c.

7. The working expenses, including direct and indirect charges, amounted to Rs. 571, and as the total revenue was Rs. 1,432, the operations of the year show a net profit of Rs. 861, equal to 1.3 per cent. on the direct Capital outlay of Rs. 60,847.

8. The average water duty per cubic foot per second was during the kharif season 269 acres and during the rabi season 37 acres.

(34).—MEDLERI TANK.

The rainfall of the year (during kharif and rabi seasons) was 18.44 inches against 9.63 inches of the previous year, and an average of 23.25 inches for the previous 10 years.

2. The level of water in the tank at the beginning of April was within a foot of outlet sill level; early in that month replenishment commenced and the highest point reached was 1' 3" below crest of weir on the 1st July; the tank therefore did not fill during the year.

3. The area irrigated, water-rate assessments, working expenses, average water-rate, as compared with the two previous years, were:—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1890-91	59	262	16	84	75	346	4.6	618
1891-92	50	312	53	178	103	490	4.76	619
1892-93	76	269	19	68	95	337	3.55	600

The above table shows a decrease of 8 acres as compared with the previous year; the falling off was in the rabi season.

4. The water-rate assessments amounted to Rs. 337 against Rs. 490 of the previous year, or a decrease of Rs. 153, which is due principally to a falling off in the cultivation of perennial crops due to the fact that in the previous year the tank did not fill and at the time of sowing perennial crops it was very low and only 1 foot above sill in April.

5. The average water-rate was Rs. 3.55 per acre.
6. The working expenses amounted to Rs. 600, being rather less than former years, or Rs. 263 in excess of the revenue derived from the tank.
7. The average water duty per cubic foot per second was during the kharif season 64 acres and during the rabi season 86 acres.

(35).—MADAG TANK.

The rainfall of the year during the kharif and rabi seasons was 20.05 inches as compared to 19.71 of the previous year and 31.83 the average of the past 10 years.

2. The area irrigated, the water assessments, the working expenses and water-rate as compared with the two previous years were :—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1890-91 ...	573	1,334	369	1,284	942	2,618	2.78	1,095
1891-92 ...	652	1,746	377	1,011	1,029	2,757	2.68	1,203
1892-93 ...	359	1,081	382	1,184	741	2,215	2.99	1,050

The area irrigated during the previous year was unusually large owing to the untimely nature of rainfall and there being a good supply of water in the tank when it was required.

3. In addition to the revenue from irrigation a sum of Rs. 229 was realized from grazing and the sale of trees, &c.

4. On the canals, 9 miles in length, fed by this tank there are good plantations consisting of 3,256 trees principally babul, nimb, tamarind and sandal.

5. The working expenses, direct and indirect, amounted to Rs. 1,050; the operations of the year thus show a net profit of Rs. 1,394, equal to about 0.86 per cent. on the direct Capital outlay of Rs. 1,61,248.

6. The average water duty per cubic foot per second was during the kharif season 80 acres and during the rabi season 46 acres.

(36).—ASUNDI TANK.

During the year under report a rain gauge was established at the tank site and registered a fall of 17.16 inches against 13.68 during the same period registered at Ranebennur 6 miles distant, where the gaugings for this tank were previously taken.

2. During the first week of April the tank was dry and replenishment commenced on the 8th of that month; it was dry again from the 22nd to 28th of August and again from the 13th September to 28th October when a partial replenishment took place, but at no time during the year was there more than 7½ feet of water over outlet sill, or 6½ feet below full supply level.

3. The area irrigated, water-rate assessments, working expenses and average water-rate as compared with the two previous years were :—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1890-91 ..	58	263	27	77	85	340	4.00	707
1891-92 ...	63	184	69	215	132	399	3.02	672
1892-93 ...	46	196	18	120	64	316	4.19	1,162

The above table shows a decrease of 68 acres. The falling off is obviously due to the deficient supply of water in the tank, the original irrigators taking

what they want first. In addition to the area irrigated under crop rates, there was an area of 124 acres irrigated under the consolidated assessment.

4. The decrease in water-rate assessment, Rs. 83, is not in proportion to the decrease in area irrigated, higher rated crops must, therefore, have been irrigated during the year under report. The irrigation share of the consolidated assessment of the 124 acres under that rating was Rs. 472, making a total of Rs. 788.

5. The working expenses, direct and indirect, amounted to Rs. 1,162 against Rs. 672 of the previous year, the extra charges are due to a sum of Rs. 463 having been expended on pitching repairs and drainage of the land below the tank; the latter work was carried out with a view to getting rid of the 'reh' efflorescence referred to in last year's report.

6. The average water duty per cubic foot per second was during the kharif season 26 acres and during the rabi season 88 acres.

(37).—MÁVINKOP TANK.

This tank is under the control of the Revenue Department. The area irrigated was 441 acres, all kharif; and the net consolidated assessment, Rs. 1,139. The revision settlement of lands under this tank will be made in 1894 when it is proposed to impose extra rates on the lands irrigated.

(38).—GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS.

As detailed in the previous revenue report the new storage works were completed during the year 1890-91. The expenditure up to date has been Rs. 10,41,633 against the estimated amount of Rs. 12,86,078. Some excess is anticipated on account of land compensation, which is being paid by the Revenue Department.

2. The length of distributaries in Statement Nos. I—A and II—A shows an increase of 24 miles on account of diverting the portion of minor distributary in Survey No. 112 of Arbhávi village.

3. The cost of the land submerged by the new weir is now being settled by the Court.

4. The area irrigated during hot weather was 204 acres against 169 acres of the previous year. No applications for perennial crops were refused.

5. The monsoon rain was very early and the level of water in the reservoir began to rise from 9th April 1892.

6. The rainfall gauged at the head of the canal compares with the previous year as follows :—

Year.	Rainfall.
1891-92	19-04
1892-93	31-68

7. The area applied for and irrigated, the water assessments, working expenses, average water-rate as compared with the two previous years were :—

Years.	Total Area applied for.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1890-91 ...	3,699	2,562	4,316	1,286	2,884	3,848	7,200	1-87	4,422
1891-92 ...	4,932	3,629	6,160	2,371	5,281	6,000	11,441	1-91	5,333
1892-93 ...	3,985	2,821	7,139	1,027	2,218	3,848	9,357	2-43	5,718

On account of sufficient and timely rainfall there was considerable falling off in the area irrigated compared with last year, as the rayats were able to cultivate monsoon crops without the assistance of the canal.

8. The area actually irrigated, 3,848 acres, amounted to 23 per cent. of the entire irrigable area, 16,663 acres, so far as now constructed.

9. The increase in the assessment of kharif as compared with last year in the above table was due to the large area irrigated in hot weather.

10. The average water-rate as compared in the above table shows an increase in the more valuable crops.

11. In addition to the water-rates, Rs. 143 were realized for canal produce.

12. The continuous supply of 47 cubic feet per second of water was given to the mills, and the revenue derived was Rs. 9,840.

13. The total assessed revenue from all sources was :—

	Rs.
Water-rates	9,357
Miscellaneous canal produce	143
Mills revenue	9,840
Total	19,340

14. The increase in working expenses as compared in the above table is mainly due to expenditure as under :—

	Rs.
Diverting portion of minor distributary in Survey No. 112 of Arbhávi village	161
Special repairs to Gokák Canal	104
Increase to measurer's pay from Rs. 45 to 50	60
Total	325

15. The area irrigated was measured by a special establishment consisting of one measurer and required number of khalásies. The measurer, in addition to his own measuring duties, inspects the canal and checks the work of the pátkaris, and, therefore, only $\frac{2}{3}$ of his salary is charged to the measuring establishment.

16. The cost of measuring the irrigated area was Rs. 791, or annas three and pies three per acre as against one anna and eleven pies of the previous year. The increase is due to the falling off in area irrigated.

17. The average discharge of canal was, for—

Kharif... ..	16.85 cubic feet per second.
Rabi	16.69 do.

and the duty of water obtained was, for—

Kharif	167 acres per cubic foot per second.
Rabi	123 do. do.

18. The maximum flood occurred on the 20th July 1892 and rose 3.45 feet above the level of the present weir crest.

19. The under-sluices were opened on 16th June 1892 and closed on 19th November 1892.

20. The year being one of extremely favourable rainfall, that irrigation was neglected by the rayats is not surprising; under the circumstances the area irrigated may be considered satisfactory.

21. Survey was made for extending the main canal so as to supply a large area on the north side of the Mállápur Nála, and it is expected that the work when carried out will be remunerative.

22. The water-rates are enhanced from the 1st April 1893; and the effect will be noted in next year's report.

23. Around the edge of the water of the storage tank water was taken for 66 acres against 57 acres of the previous year.

24. The existing trees were maintained and are in number 6,993 :—

Above 6 feet	2,100
Within 6 feet and above 2 feet	4,893

PART II.

WORKS IN OPERATION FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT.

1. The following table shows the areas irrigated in the different districts in the Deccan and Gujarāt and the consolidated revenue assessed during the year :—

Collectorates.	Number of Works.	Area Irrigated.	REVENUE.			REMARKS.
			Irrigation Share.	Land Share.	Total.	
1	2	3	4	5	6	7
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ...	66	16,788	21,317	29,341	50,658	
Kaira ...	2	8,044	28,125	11,377	39,502	
Surat ...	290	12,376	49,391	1,17,154	1,66,545	
Broach ...	28	936	2,887	4,922	7,809	
Khândesh ...	82	9,062	58,198	12,697	70,895	
Nâsik ...	271	28,391	1,61,784	37,902	1,99,686	
Ahmednagar ...	2	147	353	132	485	
Poona ...	3	515	2,857	1,015	3,872	
Sâtara ...	1	100	623	415	1,038	
Belgaum ...	67	9,910	32,832	8,202	41,034	
Dhârwar ...	471	63,423	1,71,048	42,759	2,13,807	
Bijâpur ...	15	1,990	5,754	1,432	7,186	
Râtnâgiri ...	3	1,105	4,988	574	5,562	
Total ...	1,301	1,46,187	5,40,157	2,67,722	*8,07,879	* Net consolidated assessment.

2. The following table shows the actual expenditure and receipts for the year 1892-93 on all the irrigation works in the Deccan and Gujarāt for which only Revenue Accounts are kept :—

Collectorate.	EXPENDITURE.								ACTUAL RECEIPTS.						
	Direct Charges.								Direct Receipts.			Indirect Receipts.	Grand Total Direct and Indirect Receipts.	Refunds of Revenue.	Gross Receipts less Refunds.
	Extensions and Improvements.	Main-tenance and Repairs.	Establishment.	Tools and Plant.	Total Direct Charges.	Share of Collection Charges.	Grand Total.	Water Rates from Irrigation.	Miscellaneous.	Total Direct Receipts.	Share of Consolidated Revenue.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ahmedabad ...	1,765	1,006	608	2,911	17	13,965	2,132	18,914	...	...	410	21,317	21,817	...	21,317
Kaira ...	4,499	3,859	...	...	...	...	2,817	...	...	...	...	28,125	28,535	...	28,535
Surat ...	1,390	4,223	294	1,122	84	7,108	4,309	12,106	...	...	...	49,391	49,976	...	49,976
Broach ...	...	...	...	...	...	...	289	...	...	...	...	2,887	2,887	...	2,887
Nâsik ...	6,590	3,245	...	...	...	...	5,844	...	...	...	...	58,198	69,457	...	69,457
Khândesh ...	3,830	1,829	...	...	...	...	16,173	...	...	...	...	1,61,784	1,61,784	...	1,61,784
Ahmednagar ...	...	...	...	...	...	...	35	...	...	...	...	353	353	...	353
Poona ...	104	391	112	99	...	...	706	...	...	...	...	1,038	1,038	...	1,038
Sâtara ...	...	...	...	...	...	...	62	...	...	...	...	623	623	...	623
Belgaum ...	792	6,310	318	1,202	...	...	7,532	...	...	...	...	32,832	32,832	...	32,832
Dhârwar ...	10,317	12,127	1,188	6,611	...	...	29,623	...	...	...	...	1,71,048	1,72,662	...	1,72,662
Bijâpur ...	...	1,350	82	307	...	...	1,993	...	...	...	...	5,754	5,968	...	5,968
Râtnâgiri ...	...	...	...	...	...	...	602	...	...	...	...	4,988	4,988	...	4,988
Total ...	29,236	34,094	6,045	73,583	1,042	1,43,565	84,411	1,97,978	2,595	2,214	4,809	5,40,157	5,44,908	56	5,44,910

* Represents charges in the Civil Department, not adjusted in the Finance Accounts.

3. The total amount of revenue realized from and the working expenses of this class of works during the past three years was as follows :—

	1890-91.	1891-92.	1892-93.
	Rs.	Rs.	Rs.
Revenue realized ...	5,27,369	5,27,967	5,44,910
Working expenses ...	1,96,256	1,69,648	1,97,976
Net Revenue ...	3,31,113	3,58,319	3,46,934
Percentage of working expenses to Revenue ...	37.21	32.13	36.33

4. The expenditure from contributions and Pātpāla funds on all irrigation works for which only revenue accounts are kept for the year 1892-93 is as shown in the table below :—

Collectorate.	EXPENDITURE.			REMARKS.
	Contributions.	Pātpāla Fund.	Total.	
1	2	3	4	5
	Rs.	Rs.	Rs.	
Ahmedabad... ..	1,085	...	1,085	
Kaira	...	...	...	
Surat	1,697	...	1,697	
Nāsik	465	626	1,091	
Khāndesh	...	617	617	
Ahmednagar	...	...	...	
Poona	...	...	...	
Sātāra	...	...	...	
Belgaum	164	...	164	
Dhārwar	4,428	...	4,428	
Bijāpur	...	...	...	
Ratnāgiri	...	...	...	
Total	7,839	1,243	*9,082	* Accounted for in the Finance Accounts under "Works for which neither Capital nor Revenue Accounts are kept."

AHMEDABAD DISTRICT.

5. The only new work carried out during the year under report was the improvement and extension of the Naika Channel, estimated to cost Rs. 16,274, and sanctioned in Government Resolution No. 24 A. I.—335 of 20th February 1891, on which an expenditure of Rs. 4,599 was incurred.

6. The receipts for the year 1892-93 amounted to Rs. 48,101, and were derived from the following sources :—

	Acres.	Assessment.
		Rs.
I.—Irrigation above the Kalambandi villages	986	5,099
II.—Irrigation from tanks fed by the river Khāri	249	1,942
III.—Irrigation from Khāri sluices proper	8,226	40,953
IV.—Irrigation below the Kalambandi villages	23	102
Total	9,484	48,101

The area irrigated was nearly the same as during the previous year.

7. The mean rate of assessment was Rs. 5·17 on lands for which water was taken by lift above the Kalambandi villages, and Rs. 7·80 for lands irrigated by the tanks fed from the river Khāri and Rs. 4·43 for lands irrigated below the Kalambandi villages from the Khāri river. On lands under the Khāri sluices proper, i.e., Kalambandi villages, the rates are consolidated, the average share per acre for land and water being as under :—

	Land share.	Water share.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	1 14 7	5 2 5	7 1 0
Alienated land	2 1 6	5 5 8	7 7 2
Ināmi land consolidated ... ..	.....	.....	8 3 9
Assessment jirayat land ... ..	.....	3 8 1	3 8 1

The working expenses during the year, exclusive of charges of revenue collections, amounted to Rs. 1,062.

8. As regards the system of tank irrigation in vogue in this district it may be said to be confined to four talukas, *viz.*, those of Daskrohi, Sánand, Viramgám and Dholka.

• Old Works.

9. The tanks consist mostly of shallow sheets of water formed by an earthen bund across a small depression or in some cases a natural water-course, which is deepened within a certain area by the removal of the soil to form the bund. They are all entirely dependent on the local rainfall for their supply, but as the country is extremely flat and liable in many places to very extensive floods, the catchment areas are liable to great variations and the bunds are very apt to be burst. This has been further facilitated by the system followed by the rayats of breaching the banks in order to make cuts for the supply of the fields below them.

10. Of late years and in tanks repaired by this department, *i.e.*, such as irrigate over 50 acres, masonry or pipe outlets have been provided, and this facilitates the cultivation of the rice fields below the bund. A large proportion of these tanks are situated near villages and are used for drinking purposes as well, and in ordinary years about 40 per cent. of these and almost all the out-lying tanks dry up in the hot weather.

11. Of late years a number of these tanks have been improved by extending their bunds so as to impound a large superficial area of water, the latter is run off to irrigate the fields below, and on the areas thus exposed crops of wheat, &c., are grown.

12. There are a large number of tanks which it will not pay Government to maintain, and experience proves that even in those maintained by Government the expenditure is often heavier than the return obtained.

Catchments.

13. The catchment areas, as above stated, vary so greatly that it is impossible to define them.

14. These are very long and are usually of a very weak section and liable to be much damaged by village cattle and irrigation cuts. The average top breadth rarely exceeds 5 feet;

Dams.

they are never strengthened by pitching or artificial means.

Waste weirs.

15. There are but rarely any waste weirs at all, the surplus water being allowed to run round the ends of the embankments as soon as full supply level is reached. When waste weirs are provided they are invariably too small.

16. As before stated, the usual manner of letting out the water is to breach the banks, but in places masonry and pipe outlets have been provided,

Outlets.

Channels.

17. There are virtually no channels,

Catch-water drains,

18. These are so rare as to be almost non-existent.

Irrigated areas,

19. The area below the tank is simply divided by 'páls' and is all under one head, that of 'Rice Land.'

20. During the year under report 7 tanks were repaired at a total cost of Rs. 3,591, of which Rs. 1,263 were spent on repairs and Rs. 2,328 on improvements, including Rs. 1,085 contributed by the villagers concerned. A sum of Rs. 264 was expended on surveys of tanks for the preparation of estimates for repairs and improvements.

SURAT AND BROACH,

21. During the year under report 16 tanks were repaired at a total cost of Rs. 7,262, of which Rs. 5,154 were spent on repairs and Rs. 2,108 on improvements. Of the above a sum of Rs. 1,540 was contributed by the villagers interested in the irrigation of lands under the different tanks.

22. A sum of Rs. 107 was expended in surveying tanks for preparation of estimates for repairs and improvements. Owing to changes in establishment a very limited number of tanks were only surveyed.

23. There are in all 1,656 irrigation tanks of all sizes in the Surat collectorate as under:—

Táluka.	Number.
Bárdoli	59
Bulsár	270
Chikhli	173
Chorási	49
Jalálpur	338
Mándvi	32
Olpád	581
Párdi	154
Total	1,656

Of these, no less than 846 are very small unimportant tanks irrigating less than 5 acres, while 526 tanks irrigate from 5 to 20 acres and 284 tanks from 20 to 50 acres and over. Some of the tanks are used as village tanks as well, and these are generally fair-sized tanks.

24. The tanks as a rule consist of long earthen bunds thrown up at suitable places, and have small catchment areas. Some of the larger tanks have masonry waste weirs; many of the tanks have for want of repairs silted up considerably, and the dams have been badly cut up. Very few tanks have pukka outlets, the system in vogue being to draw off the supply through temporary cuts made in the bund. The tanks which are now repaired are provided with pipe outlets, with a regulating head wall in the tank.

25. During the year under report the tanks in Jalálpur Táluka were minutely inspected in accordance with the orders contained in Government Resolution No. 125-W. I.—1473 of 15th September 1892. The results of the enquiry will be laid before the Tank Committee appointed in the above Government Resolution. It is roughly estimated that the repairs and improvements to all the tanks in the Surat Collectorate with the exception of the very smallest and least important tanks will be about Rs. 4,00,000.

26. The total area irrigated and the consolidated revenue assessed on irrigation tanks in the Surat Districts as reported in Canal Return No. VIII for the year 1892-93 by the Collector of Surat, is:—

Area.	Net consolidated Assessment.	Irrigation Share.	Land Share.
Acres.	Rs.	Rs.	Rs.
12,381	1,68,545	49,391	1,17,154

27. The management of irrigation tanks rests with the Revenue Department, and hence no separate establishment is entertained on this account. The receipts are also realized by the Revenue authorities.

28. There are 28 irrigation tanks in the Broach Collectorate, and plans and estimates for repairs and improvements to 4 of these tanks were made out and sanctioned for execution next year. Canal Return No. VIII in respect of these tanks has not yet been received from the Collector of Broach.

NASIK DISTRICT.

29. There are 191 permanent bandhárás situated in the catchment of the Godávri in this district, almost all of which were constructed before British rule; since 1878 they have been in charge of the Public Works Department, and have been repaired and improved from time to time by Government aided by contributions from the cultivators.

30. The Godávri and its tributaries on which old irrigation works exist, rise in the Western Gháts or on spurs running eastwards from them; they depend entirely on rainfall for their water and are subject to occasional very heavy floods. The supply is generally ample to the end of November, but it decreases steadily throughout the cold and hot seasons.

31. These bandhárás bear evidence of having been gradually brought to their present state; many originated in a small simple brushwood and earthen dam thrown across the stream after each monsoon, often resting against upright

stones fitted into holes hewn in the rocky bed of nála. From one end of the dam a channel was made along the river bank until the village fields were reached. The inconveniences of this temporary arrangement suggested the advisability of establishing masonry weirs or bandháras wherever possible, and the number of these increased by degrees; there were, however, many of them still in a very imperfect state when taken over by this Department and their improvement is being gradually carried out.

32. *Deficiencies and requirements of old bandháras and Channels.*—The fault common to almost all bandháras is :—*first*, that the channel is frequently below the flood level of the river for a considerable length, and it is constantly liable to damage; *second*, that there are no sluices at head to regulate the flow of water down the channels; *third*, the bandháras have occasional insecure and leaky foundations; or the masonry is inferior or the length insufficient duly to discharge floods: these faults are being remedied as funds permit.

33. The maintenance of masonry works, &c., is as a rule done by Government and it is customary to require the people to clear silt and do simple earthwork repairs, the villagers making voluntary contributions, regarding the amount of which the Collector is consulted. No Pátphála, such as that in vogue in Khándesh, exists in this district.

34. The villagers manage the distribution of water by the aid of Pátkaries, appointed as a rule and often paid by themselves; besides looking after rotation of supply these men do very petty repairs and report damages.

35. The results of improvements often are that a greater area than that fixed in the survey settlement as bágayat or garden land is brought under irrigation: and on this land a water-rate is leviable. Increase of revenue from this source cannot, however, be great; and such increment can only be looked for in enhanced rates, should they ever be possible at times of revisions by the Survey Department.

36. *Progress in Maintenance and Repairs, &c.*—Eighty works, visited during the year, were found in good order: 26 works were surveyed and plans and estimates for improvements prepared and submitted for sanction, and 17 improvement and repair works were sanctioned during the year and carried out.

37. The following statement shows the expenditure on bandhára repairs and improvements during the year :—

No.	Name of Weir.	AMOUNT.		Remarks.
		Estimated.	Expended.	
	REPAIRS.	Rs.	Rs.	
	TÁLUKA NÁSIK.			
18	Hirwádi Bandhára	83	83	Leakage through head supply weir stopped; two breaches in the channel closed. The water-supply has been improved.
31	Chikhli Nála Bandhára, Gangápur.	36	35	Breach at the end of right flank closed by an embankment, to confine floods to the weir and river bed.
43	Rancha Bandhára at Páthardi ...	95	89	Work remaining from last year, stopping leakage and closing breaches, completed. These breaches are, it is hoped, now permanently stopped and the water-supply greatly improved.
	TÁLUKA DINDORI.			
8	Donicha Bandhára at Jánori ..	418	414	Leakage in the conduit stopped and sides strengthened by embankment. Water-supply improved.
	TÁLUKA NIPHAD.			
18	Bandhára at Ranvad	144	144	Balance of repairs to crest of weir completed. The water-supply improved.
	Bandhára repair surveys in the Godávári basin, Násik Collectorate.	222	182	Completed.
	Old Wadali Canal	67	66	Do.
	Total Repairs ...	1,065	993	
	Carried over ...	1,065	993	

No.	Name of Weir.	AMOUNT.		Remarks.
		Estimated.	Expended.	
	Brought forward ...	Rs. 1,065	Rs. 993	
	IMPROVEMENTS.			
	TÁLUKA NÁSÍK.			
18	Hiravadi Bandhára ...	364	212	One scour sluice in a breast wall and a new screen wall and flood embankment at head-works partly finished during the year. Work still in progress. The maximum estimated flood can now be confined to the bandhára.
19	Bandhára Kartia Márti at Násik...	314	313	Low part in rock barrier built up and a new regulator constructed at head, with a safety weir beyond. By this work an annually increasing breach in the high bank of the channel near the head has been permanently stopped and much waste of water prevented.
31	Chikhli Nála Bandhára at Gangápur ...	134	131	The head safety weir extended over a breach.
41	Bandhára at Nándur Bahula ...	504	497	The usefulness of this weir has been restored by the construction of a flank wall and the strengthening of the bandhára. A new regulator was built and the channel deepened for a length of 280 feet. A paved crossing was also provided.
	TÁLUKA DINDORI.			
1	Bandhára at Manore ...	85	78	Channel diverted in two places and thus protected from nda floods. Commenced last year and completed this.
11	Bandhára at Indore ...	958	960	Old weir pulled down entirely and reconstructed with flank walls, regulator, &c. By these works the annual cost of construction of a temporary weir is saved to the villagers and all floods are confined to the bandhára. Revenue reported to be increased by Rs. 60 nearly.
	TÁLUKA NÍPHÁD.			
16	Bandhára at Ránvad ...	239	237	An escape with a slab drain or bridge was built on the Pálkhed-Níphád road to prevent breaching of the channel bank.
9	Raktpir Bandhára at Pimpalgaon Basvant ...	294	289	Escape 31 furlongs from the bandhára under-planned and protected by a ramp and curtain wall founded on rock.
	Bandhára extension and improvement survey in the Godávári Basin, Násik Collectorate ...	102	102	Completed.
	Total, Improvements ...	2,994	2,819	
	Total Repairs and Improvements ...	4,059	3,812	

Of the total cost of Rs. 3,812 for repairs and improvements, the irrigators contributed Rs. 465 or 12 per cent.; this may be taken as an index of the value they attach to these works.

38. The total area cultivated on all these works during 1892-93 was 17,817 acres and the water share of the revenue was Rs. 80,804, as follows, giving an average assessment per acre of Rs. 4.53. It would be interesting to know even approximately the value of the crops raised: information on this point might be obtained from the Revenue Department. The details of area and revenue are as follows:—

No.	Táluks.	Area irrigated.	REVENUE.		
			Irrigation Share.	Land Share.	Total.
	Násik Collectorate.	Acres.	Rs.	Rs.	Rs.
1	Násik Táluksa ...	2,756	8,585	4,258	12,843
2	Sinnar " ...	4,457	21,988	6,470	28,458
3	Dindori " ...	3,054	15,622	4,607	20,229
4	Níphád " ...	4,562	21,056	7,177	28,233
5	Chándor " ...	2,812	13,126	3,413	16,539
6	Yeola " ...	176	427	77	504
	Total ...	17,817	80,804	26,002	1,06,806

39. During the year there were three calls for the substitution of permanent for temporary bandhárás. The proposals are feasible and likely to be remunerative to the State. One of them has been submitted for sanction and the other two will follow.

40. The areas and assessments during the last three years are as follows :—

Years.				ASSESSMENT.		
				Irrigation Share.	Land Share.	Total.
				Acres.	Rs.	Rs.
1889-90	...	...	...	17,899	81,072	26,151
1890-91	...	...	...	17,915	81,069	26,149
1891-92	...	...	...	17,816	80,804	26,002
Total				53,630	2,42,945	78,302
Average				17,873	80,981	26,100
						1,07,082

The reasons of the variations in area, &c., are not reported.

* *Principal Crops Irrigated.*—*Rice* is the principal crop in Sinnar and Dindori during the monsoon; *wheat* in all tálukas during the rabi season; and *sugarcane, ground-nuts and garden produce* are grown as perennial crops wherever the water-supply is generally sufficient or where a well affords a supplementary supply.

41. The rainfall in the different tálukas of the Godávári basin is given below :—

No.	Names of Tálukas.					Kharif.	Rabi.	Total.	Average of last 11 years.
						1892-93.			
1	Sinnar	...	...	...	...	32.56	5.46	38.02	27.79
2	Násik	...	...	...	...	26.93	7.08	34.01	32.60
3	Dindori	...	...	...	...	32.09	1.44	33.53	32.32
4	Niphád	...	...	...	...	34.25	2.90	37.15	25.27
5	Chándor	...	...	...	...	38.67	1.08	39.75	31.60
6	Yeola	...	...	...	...	31.74	3.56	35.30	23.78

The monsoon did not begin until early in July, and owing to the scanty rainfall of the previous year irrigated crops suffered; some rain late in May 1892, however, saved crops under wells which had run dry. The monsoon at first was rather heavy and did harm in September to kharif crops, but on the contrary did immense good to perennial and rabi crops; so much so that there was no need of water from the rivers except for rice till late in October, and irrigation was maintained even in the dry months without recourse to wells.

42. Under many of the bandhárás a larger area is being irrigated than registered by the Revenue Survey Department as entitled to water; but Government appear to have no legal right to assess such areas with water-rates except after improvements have been effected to the works at Government cost. Steps will be taken to prepare a list of those works that have been extended or improved, and when this is done it may be possible to obtain water-rates on irrigated lands under old bandhárás now assessed at dry-crop rates. At present when irrigation is relinquished or when dry cultivation is carried on instead, there is a loss of revenue; but there is no increase when an additional area is watered. The

result will probably be that water will be systematically transferred from land paying irrigation revenue to land not so assessed ; there seems at least nothing to prevent so undesirable a movement being started.

KHÁNDESH IRRIGATION DISTRICT.

43. The following table gives a summary of the area irrigated and the revenue derived from these works :—

Description.	Khándeš.	Násik.	Total.
	Acres.	Acres.	Acres.
Area irrigated at consolidated rates ...	9,062	10,574	19,636
Area irrigated at separate water-rates ...	.....	346	346
Total ...	9,062	10,920	19,982.
Consolidated revenue ...	70,895	92,380	1,63,775
Irrigation share of consolidated revenue ...	58,198	80,980	1,39,178
Separate water-rates ...	.....	1,168	1,168
Total ...	58,198	82,148	1,40,346

The above figures are exclusive of the areas under the Lower Pánjhra River system ; these were included in the last year's report, with a view to obtain credit for the sum of Rs. 1,190, on account of the average revenue realizations made before improvements to those works, and so as to utilize a proportionate share of the annual grant for the maintenance of works for which only Revenue Accounts are kept, towards the maintenance of some of the old channels included in the Lower Pánjhra River system. The Examiner of Public Works Accounts, however, rightly or wrongly disapproved, and the "thal" areas under the Lower Pánjhra River system have been omitted from the above table this year.

44. The year's operations in maintenance and improvements of these works have been given in detail in the Administration Report for the year. The expenditure during the year amounted to Rs. 50,850 as under :—

	Rs.
Improvements ...	8,046
Repairs ...	4,111
Establishment ...	37,693
Tools and Plant ...	1,000
	<u>Rs. 50,850</u>

or 36·23 per cent. of the revenue earned.

45. The net revenue earned on account of water-rates after allowing for direct working expenses was Rs. 89,496.

46. The unrealized balance of revenue from the works improved by the State amounted to Rs. 402 at the close of the year.

AHMEDNAGAR DISTRICT.

47. The only two works in this Collectorate are situated in the Akola Taluka, viz. :—

1. Sávargaon Bandhára.
2. Gárdáni.

48. Repairs to the Sávargaon Bandhára were carried out during the year at a cost of Rs. 74.

49. The following table shows the area irrigated and the consolidated revenue assessed during the year :—

Name of Bandhāra.	Area irrigated.	REVENUE.		
		Irrigation Share.	Land Share.	Total.
	Acres.	Rs.	Rs.	Rs.
Sāvargaon	76	200	61	261
Gārlāni	71	153	71	224
Total ...	147	353	132	485

50. Information regarding actual revenue from and expenditure on these works will be found in statements which will be furnished by the Examiner of Public Works Accounts.

POONA DISTRICT.

51. The following are the works in this Collectorate for which only Revenue Accounts are kept :—

1. Dam at Kasur.
2. Dam at Wadaz.
3. Dam at Agar.
4. Dam at Nārāyangaon.
5. Dam at Pātas.
6. Tank at Wadhana.

The description of these works was given in the Revenue Report for 1881-82.

52. No expenditure was incurred on these works for maintenance and repairs during the year 1892-93 except Rs. 391 on repairs to the Nārāyangaon Bandhāra and on the sluices of its two channels.

BELGAUM DISTRICT.

53. In the Belgaum Collectorate there are, according to the complete list of tanks published as an appendix to the printed Irrigation Revenue Report of 1889-90, 69 old irrigation tanks, each irrigating over 50 acres, the areas and revenue from which were given in the report for 1891-92.

54. From the investigation now proceeding under the orders of Government Resolution No. 125 W. I.—1473 of 15th September 1892, it is found that the number is under-stated and, if necessary, alteration will be made when the exact number is arrived at. The whole question of maintaining and repairing tanks, irrespective of the acreage irrigated, is under investigation, and the Sampgaon Taluka, which was chosen as a typical one, is in course of thorough inspection. It is probable, therefore, that the report for 1893-94 will contain the result of the investigation.

55. Plans and estimates were prepared for the repairs and improvements to the following tanks :—

No.	Village.	Name.	Cost of Repair.	Cost of Improvements.	Total.
			Rs.	Rs.	Rs.
1	Ambadgatti ...	Dodkari ...	1,588	...	1,588
10	Basargad ...	Komarkari ...	2,006	357	2,363
11	Deversigihalli ...	Hoskari ...	1,157	345	1,502
13	Do. ...	Waddankeri ...	600	...	600

and the work was put in hand.

56. Repairs and improvements to the Komarkari Tank No. 10 at Basarkod were carried out and completed during the year under review at a cost of—

Repairs.	Improvements.	Total.
Rs. 2,006	Rs. 357	Rs. 2,363

57. It would be premature to make any further remarks on these tanks for the year under review.

DHARWAR DISTRICT.

58. The tanks under this class were very fully described in last year's report.

59. Hitherto only the tanks irrigating over 50 acres have been in the charge of this Department; but in September of the year under report a Government Resolution was issued in which the responsibility of Government for the repair of all tanks, both large and small, was recognized. The Resolution also appointed a Committee to consider and report on the question of the repair and maintenance of these tanks. Information on the subject was being collected, but the Committee had not met before the close of the year.

60. As one result, however, of the principle accepted in the Government Resolution, 22 of the minor tanks (*i.e.*, irrigating less than 50 acres) were repaired during the year by this Department at a cost of Rs. 1,585.

61. Of the large tanks, *i.e.*, those irrigating over 50 acres, repairs and improvements to 41 tanks were in progress during the year.

62. It may be anticipated that when the report of the Committee above referred to has been considered by Government and final orders issued thereon, the general improvement will be undertaken to the water-supply of such of all the 3,320 tanks in the Dhárwar District wherever such may be found necessary and feasible.

BIJAPUR DISTRICT.

63. There are 17 tanks in this district, and a brief description of each of them was published in the report for 1891-92.

64. To some of the tanks repairs were executed during the year under report as under:—

	Rs.
Mamdapur Tank (large)	139
Do. (small)	209
Kamatgi Tank	39
Kendur Tank	148
Talachgud Howd	188
Timsagar Tank (lower)	100
Making a temporary waste weir in the dam of above tank which was in danger of bursting when full	5
Nandikeshwar Tank	525
Parvati Tank	197

RATNAGIRI DISTRICT.

65. There are 4 irrigation tanks in this district. Annual ordinary repairs to two of them, *viz.*, the Warad and Pat, were executed during the year, and to the third, the Pendur Tank, a channel was cut to drain off water standing behind the dam, at a cost of Rs. 320.

66. A complete statistical list of these tanks has been prepared and will be ready for publication as an appendix to the revenue report for 1893-94.

AGRICULTURAL WORKS.

67. The following table shows the financial results of the several channels :—

Names of Channels.	Expenditure during the year.	Total cost up to date.	Receipts from sale of occupancy rights.	Balance against Capital.	Area assessed under Settlement.	Land taken up for cultivation.	Assessment of land taken up for cultivation.	Irrigation share.	Percentage of Revenue on Capital.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Jambusar Taluka.</i>									
Kora Madafar Channel including Jantrám Branch	1,647	16,003	2,363	13,640	2,750	1,460	5,231	...	33-34
Amanpur-Nadiád Channel	...	14,302	2,099	12,203	980	747	3,083	...	25-30
<i>Vágra Taluka.</i>									
Samadpor-Kadodra-Paniadra Channel	...	7,072	3,800	3,272	495	477	1,006	...	30-7½
	1,647	37,377	8,262	29,115	4,225	2,684	9,325	...	32-02
<i>Ankleswar Taluka.</i>									
Piladra Channel (under construction)	8,125	9,145	...	...	...	...	...	...	...

68. The amounts realized from sales of occupancy rights during the year 1892-93 were as follows :—

	Rs.
1. Kora Madafar Channel including Jantrám Branch ...	769
2. Amanpur-Nadiád Channel	40
Total	809

69. On the Samudpor-Kadodra-Paniadra Channel there now remain only 18 acres of culturable land to be taken up for cultivation.

70. The Piludra Channel was under construction during the year, and the Collector reports that no land has been taken up for cultivation during the year under report.

71. The revenue amounts to 32·02 on the Capital.

3. The entire Capital outlay under all heads at the end of the year stood at Rs. 2,53,16,735, of which Rs. 1,79,92,580 was the expenditure on Major Works.
Capital outlay.
4. The interest charges on Productive and Protective Works to the end of the year amounted to Rs. 1,07,84,992, and deducting the total net revenue realised, or Rs. 14,76,926, the deficit at the end of 1892-93 amounted to Rs. 93,08,066.
Interest charges.
5. There is no change in the gross area under command, but the irrigable area has been increased during the year from 559,911 to 571,903, due to the increase under the Nira Canal, referred to in para. 2 *ante*.
Irrigable area under command.
6. The total area irrigated during the year was only 65,487 as compared with 96,025 acres in the previous year, showing a falling off of 30,538 acres, which was entirely due to the very heavy and favourable rainfall, which extended to the areas affected by all works, and in many cases was more than double that of the previous year; the average rainfall of the year distributed over the Presidency proper was 38.66 as against 17.59 inches in 1891-92.
Decrease in area irrigated.

In reviewing the report for the previous year, the Government of India remarked that the increase in the irrigated area was much smaller than might have been expected, and they further called for an explanation of the reasons why greater progress has not been achieved in extending the irrigated areas below new works of irrigation in the Deccan, and certain other points. As observed in the concluding portion of para. 8 of the General Remarks, the matter is receiving attention.

The remarks on this question by the Executive Engineer, Sholapur, in the reports on the Mhaswad and Ashti Tanks are interesting.

7. The principal crops irrigated were ground-nut (11,242 acres), wheat (10,765 acres), sugarcane (8,851 acres), jowari (5,871 acres), gram (5,683 acres), bajri (4,871 acres), fodder (3,956 acres), and rice (2,860 acres). The falling off as compared with the previous year was principally in the areas of jowari (23,224 acres), bajri (3,544 acres), and rice (2,143 acres). There was a considerable increase in the area of fodder and slight increase in that of wheat irrigated.
Principal crops irrigated.

8. The assessed revenue amounted to Rs. 4,79,042 against Rs. 5,76,586 in the previous year, due to the large decrease in the area irrigated. The average water-rate per acre is Rs. 4.90 as compared with Rs. 4.33 in the previous year, the increase being due to the comparatively larger areas of the higher classes of crops, or more correctly to the large decrease in the inferior classes, notably jowari. The revenue from plantations shows a considerable decrease distributed over several works, but most noticeable on the Ekruk Tank. Attention is drawn to the discrepancy pointed out in para. 20 of the General Remarks.
Assessed revenue.

It is satisfactory to notice the increase under water-power, Rs. 15,840, in this as compared with Rs. 11,510 in the previous year. Water for this purpose is so far only used on the Mutha and Gokak Canals.

9. The gross revenue realised from all sources during the year under review, after deducting refunds of revenue (Rs. 1,243), was Rs. 5,45,542, as compared with Rs. 5,12,072 in the previous year, and the net revenue actually realised amounted to Rs. 2,37,764 as compared with Rs. 2,26,179 in the previous year; the increase is due not to increase in the assessed revenue, but to the realisation of portion of the assessed and larger revenue of the previous year and outstandings.
Gross actual revenue.

The outstandings at the end of the year amounted to Rs. 31,456 as compared with Rs. 54,427 in the previous year.

In the Central Division the outstandings are represented to be due to the late receipt of the demand statements, and it is hoped that this may be remedied in the current year. The cause of the outstanding balance on the Gokak Canal, Rs. 4,963, should be explained.

10. The working expenses during the year amounted to Rs. 3,07,778 as compared with Rs. 2,85,893 in the previous year, showing an increase of Rs. 21,885. The causes of the increase are explained at length in para. 13 of the General Remarks; Government particularly desire to impress upon all the officers concerned the absolute necessity for enforcing strict economy, and Superintending Engineers should exercise the greatest care in checking all expenditure under this head, and their efforts in this direction must be judged by the results obtained.

In this regard the attention of the Chief and Superintending Engineers concerned should be directed to the high cost of measurements in the Satara, Ahmednagar and Sholapur Districts; there can be no good reason why the rates should be so much greater than in other districts.

Regarding the remarks made in para. 10 of the report on the Ashti Tank regarding the fields sub-divided into Irrigation numbers, the Chief Engineer, Central Division, should consider whether a further reduction in the size of the numbers would meet the objections, and what other modifications he would recommend.

11. The net revenue of the year, after deducting working expenses,
Net revenue. was:—

	Rs.
(a.)—On the basis of assessments	1,71,264
(b.)—On the basis of realisations	2,37,765

as compared with Rs. 2,90,693 and Rs. 2,26,179, respectively, in the previous year.

12. The Nira Canal and Mhaswad Tank show a profit of Rs. 38,017 as compared with Rs. 8,168 in the previous year.

13. The Productive works show a profit of Rs. 1,81,115 against Rs. 2,03,443 in the previous year. The decrease of Rs. 22,328 is principally due to decrease in revenue on the Mutha Canals. The question of improving the efficiency of works in connection with the Ekruk Tank project is receiving consideration.

14. The Imperial Minor Works show a profit of Rs. 6,875 as compared with Rs. 3,054 in 1891-92. On the Gokak Canal there was a profit of Rs. 11,757 against Rs. 11,514. The Government of India have again raised the question of handing over some of the irrigation works to the Revenue Department. The matter will receive due consideration on receipt of reports called for from the local officers.

15. The several subjects dealt with in the reports on the Mhaswad and Ashti Tanks should form the subject of separate reports from the Chief Engineer, Central Division, and he should be requested to favour Government with his remarks on paras. 7 and 12 of the report on the Mhaswad Tank, and on paras. 9, 10 and 11 of the report on the Ashti Tank. The question of crediting the small revenue derived from land in Nandgaon to the Parsul Tank, noted in para. 13 of the report accompanying No. 4844, dated 5th October 1893, from the Superintending Engineer, Central Division, should also form the subject of a separate reference.

16. Part II contains an interesting account of the old works in the Ahmedabad, Surat and Broach and Nasik Districts. The area irrigated shows an increase of 590 acres, and gross revenue an increase of Rs. 16,943. The Establishment charges show an increase of Rs. 28,328. The increase in Establishment charges is most noticeable in the Nasik and Khandesh Districts, and has not been explained; in future, the causes of increase under Establishment and Tools and Plant should be carefully analysed and any increase or high charges should be explained, and Superintending Engineers should review those figures in their forwarding reports. Questions connected with the maintenance of these small works, many of which are useful to the people and profitable to Government, are at present under consideration.

17. In future the Chief and Superintending Engineers, in submitting the reports and statistical statements for works in their divisions, should submit their own remarks on salient points. At present there is no uniformity in the practice followed by the several officers. There is no necessity for any statistical tables beyond such as are absolutely necessary for elucidation of remarks made. The remarks should follow the order of the marginal headings given in the General Remarks embodied in the accompanying printed report. Statistical information embodied in para. 15 should be furnished.

18. Copies of the report and of this Resolution should, as usual, be forwarded to the Government of India and Secretary of State,

C. T. BURKE,

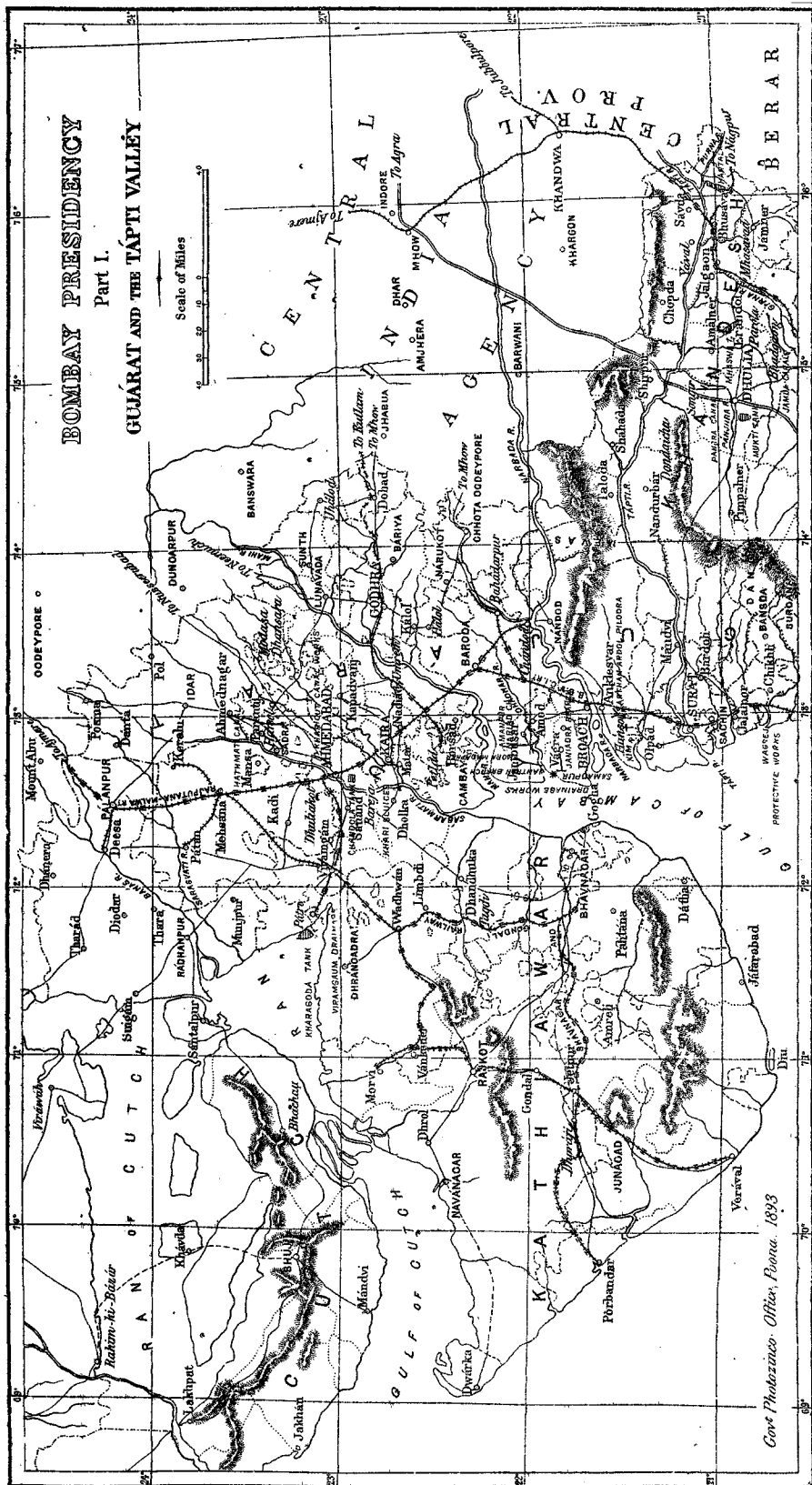
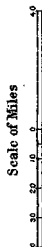
Under Secretary to Government.

To

The Revenue Department, Secretariat.	}	With copies of Report.
The Financial Department, Secretariat.		
The Commissioner N. D.		
The Commissioner C. D.		
The Commissioner S. D.		
The Survey Commissioner and Director of Land Records and Agriculture.		
The Chief Engineer C. D.		
The Superintending Engineer N. D.		
The Superintending Engineer, Indus Left Bank Division.		
The Superintending Engineer, Indus Right Bank Division.		
The Superintending Engineer S. D.	}	By letter.
The Examiner of Public Works Accounts.		
The Government of India.		
The Secretary of State for India.		
The Editor's Table.		

Part I.

GUJARAT AND THE TÁPTI VALLEY



Govt Photodup. Office, Poona. 1893

JAMNUSAR TALUKA (1. AMAPUR NARIAD CHANNEL
2. KORA MADAFAR Do. Do.
3. SAMADPUR KADODRA PANIADRA Do.
4. SARTHAN ARDOL PILODRA Do.
5. TANKLES SHWAR Do. Do.)



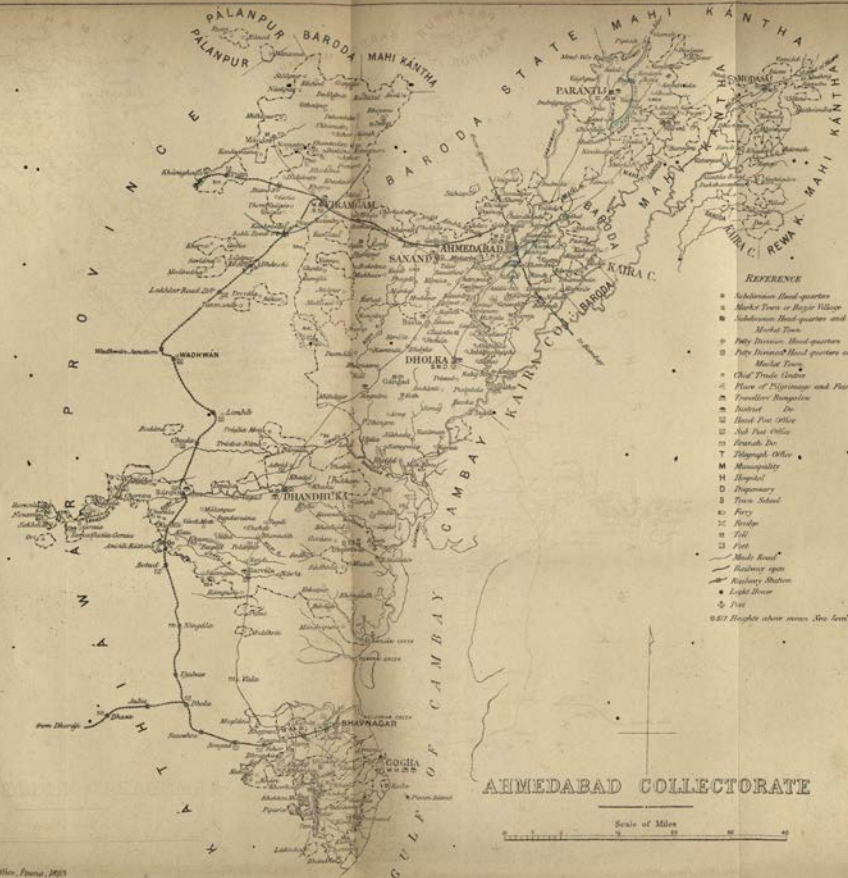
BOMBAY PRESIDENCY

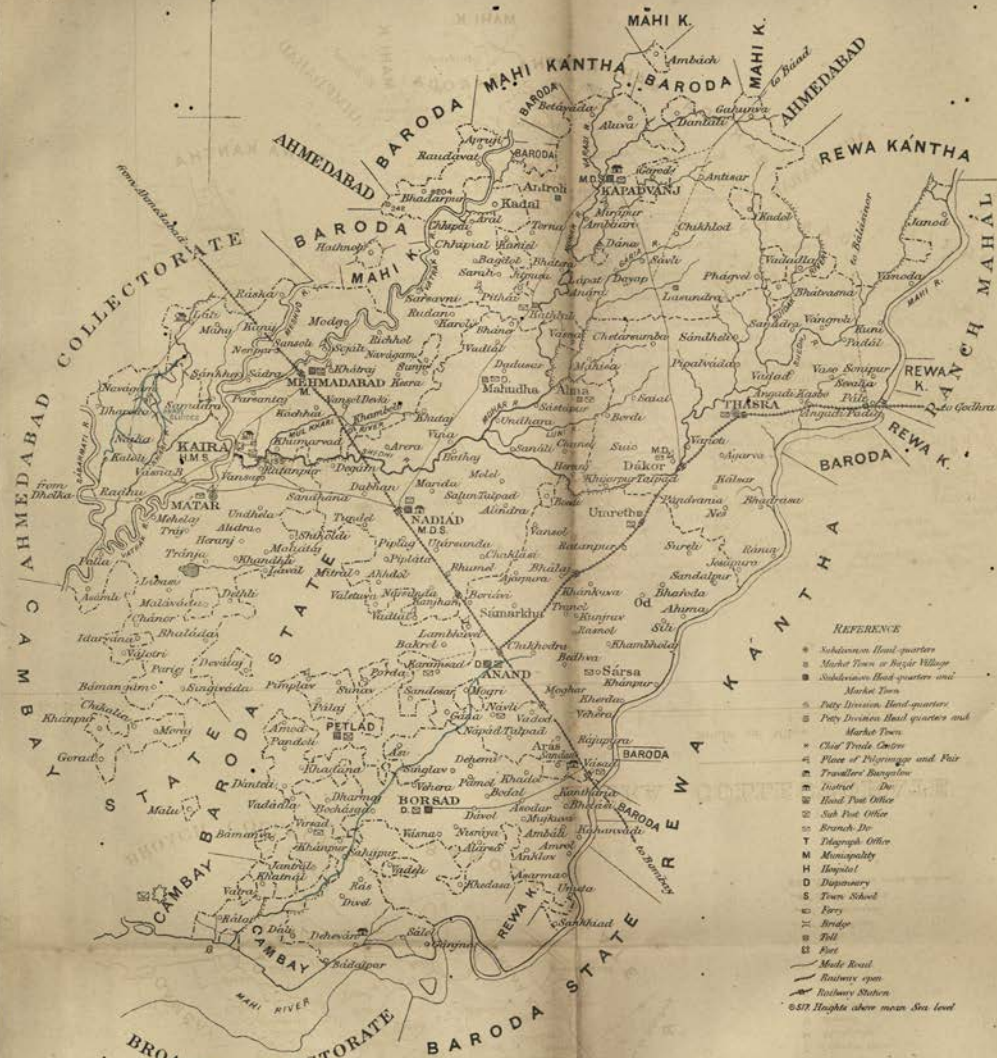
Part II

THE DECCAN, KONKAN AND KARNATIC

Scale of Miles

Govt Photodup. Office, Poona, 1893

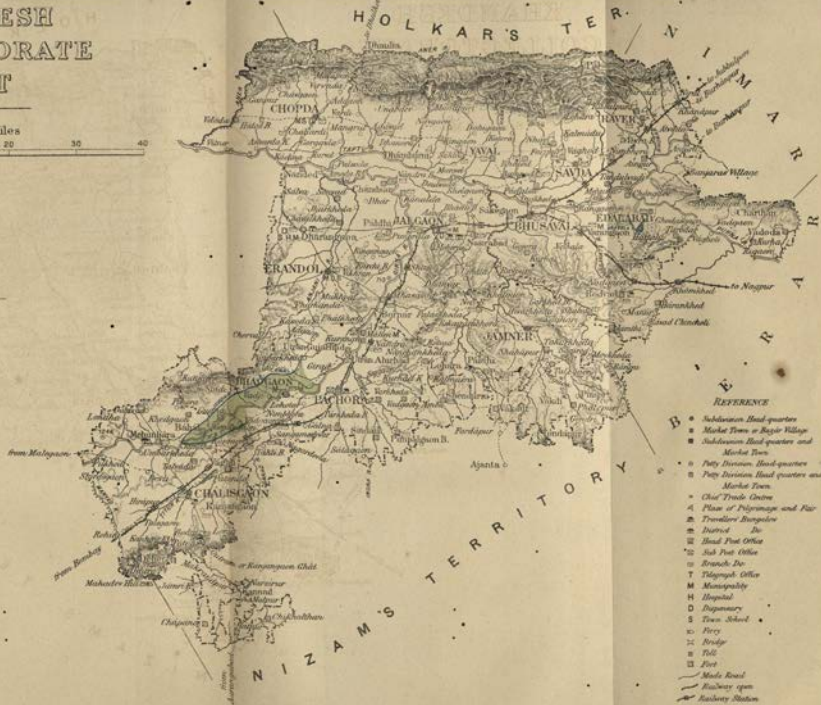
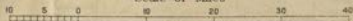






KHANDESH COLLECTORATE EAST

Scale of Miles



REFERENCE

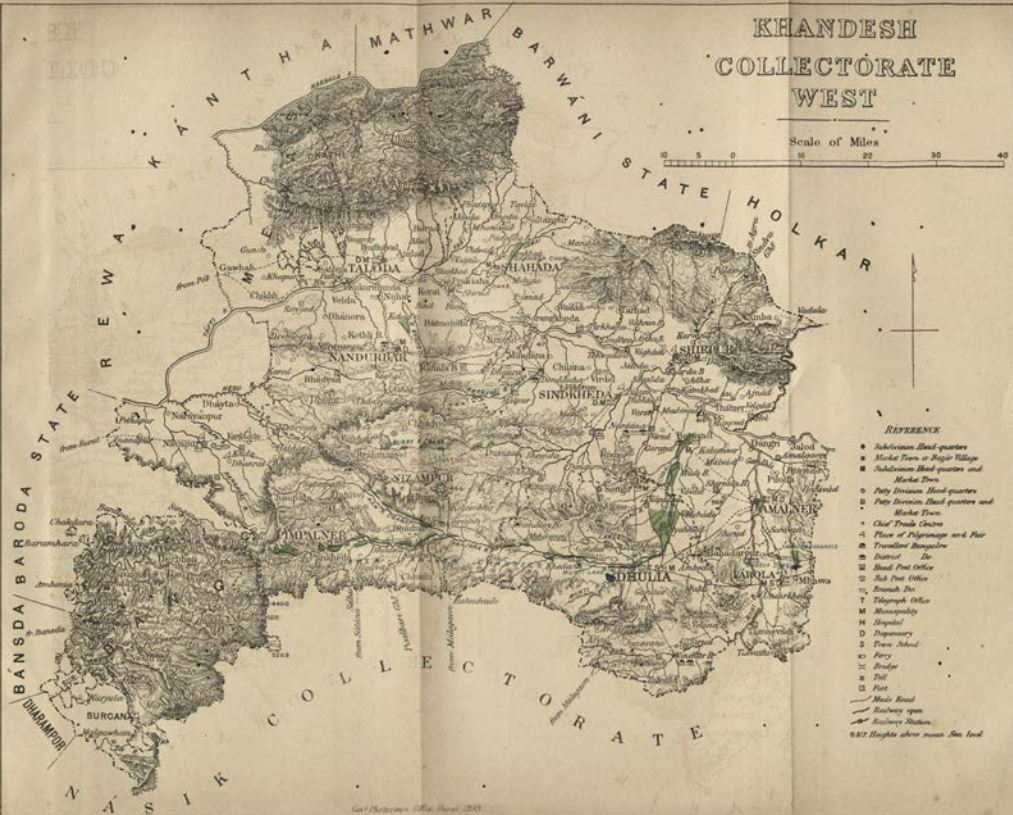
- Subdivision Head-quarters
- ▲ Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- ◆ Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief Trade Centre
- ▲ Place of Pilgrimage and Fair
- ▲ Frontier Bungalow
- District Office
- Sub Post Office
- Branch Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Jail
- Fort

— Made Road
— Railway open
— Railway Station

500 Feet above mean Sea level

KHANDESH
COLLECTORATE
WEST

Scale of Miles

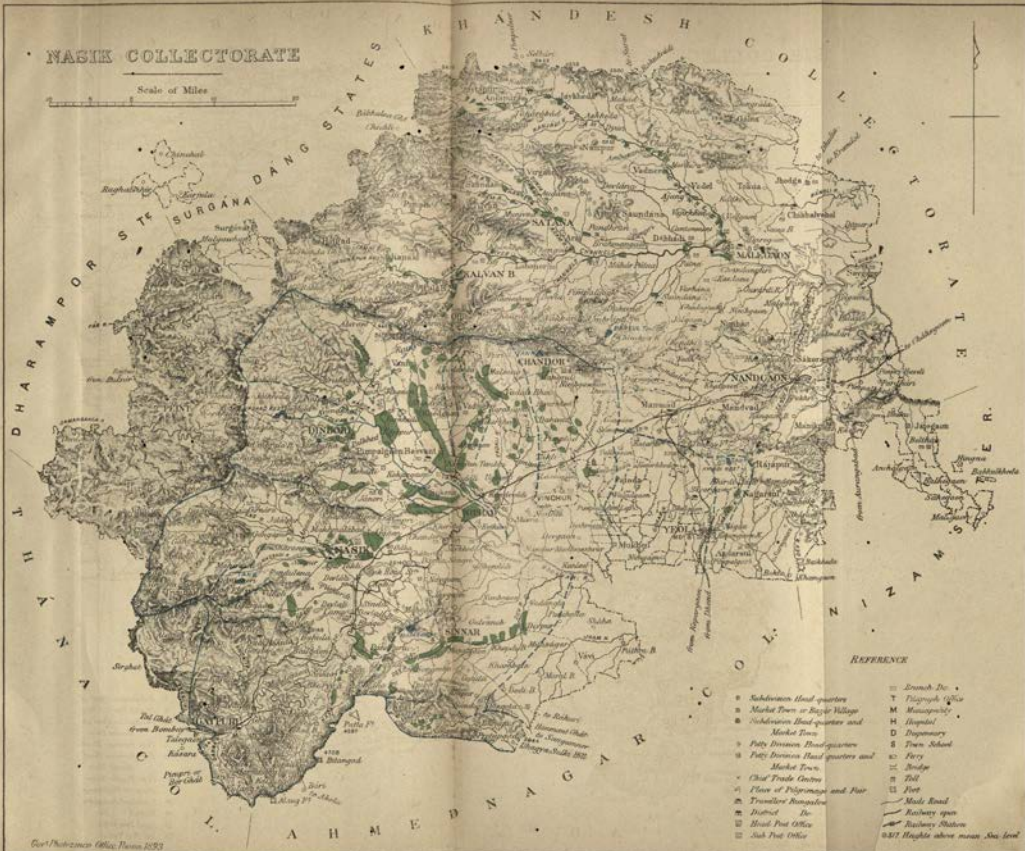


REFERENCES

© 1977 Heights above mean Sea level

NASIK COLLECTORATE

Scale of Miles



AHMEDNAGAR COLLECTORATE

Scale of Miles



REFERENCE

- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters and Market Town
- Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief Trade Centres
- ▲ Place of Pilgrimage and Fair
- Traversed European
- District Do
- Head Post Office
- Sub Post Office
- Branch Do
- Telegraph Office
- M Municipality
- H Hospital
- D Dispensary
- Town School
- Ferry
- Bridge
- Toll
- Fort
- Mails Road
- Railway line
- Railway Station

667 Height above mean Sea level



POONA COLLECTORATE

Scale of Miles



REFERENCE

- Subdivision Head quarters
 - Market Town or Bazar Village
 - Subdivision Head quarters and Market Town
 - Pany Division Head quarters
 - Pany Division Head quarters and Market Town
 - Chief Trade Centres
 - ▲ Place of Pilgrimage and Fair
 - Travelling Bungalows
 - Jail
 - Head Post Office
 - Sub Post Office
 - Branch Do.
 - Telegraph Office
 - M Municipality
 - H Hospital
 - D Dispensary
 - S Town School
 - Ferry
 - Bridge
 - Jail
 - Post
 - Made Road
 - Railway line
 - Railway Station
- 5000 Feet above mean sea level



SCHOOL FOR COLLECTORATE



SATARA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head quarters
- Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centres
- ▲ Place of Pilgrimage and Fair
- Town and Bungalow
- District Office
- Head Post Office
- Sub Post Office
- French Do
- T Telegraph Office
- M Municipality
- W Hospital
- D Dispensary
- S Town School
- xx Ferry
- xx Bridge
- Toll
- Post
- Made Road
- Road open
- Railway line
- Railway Station

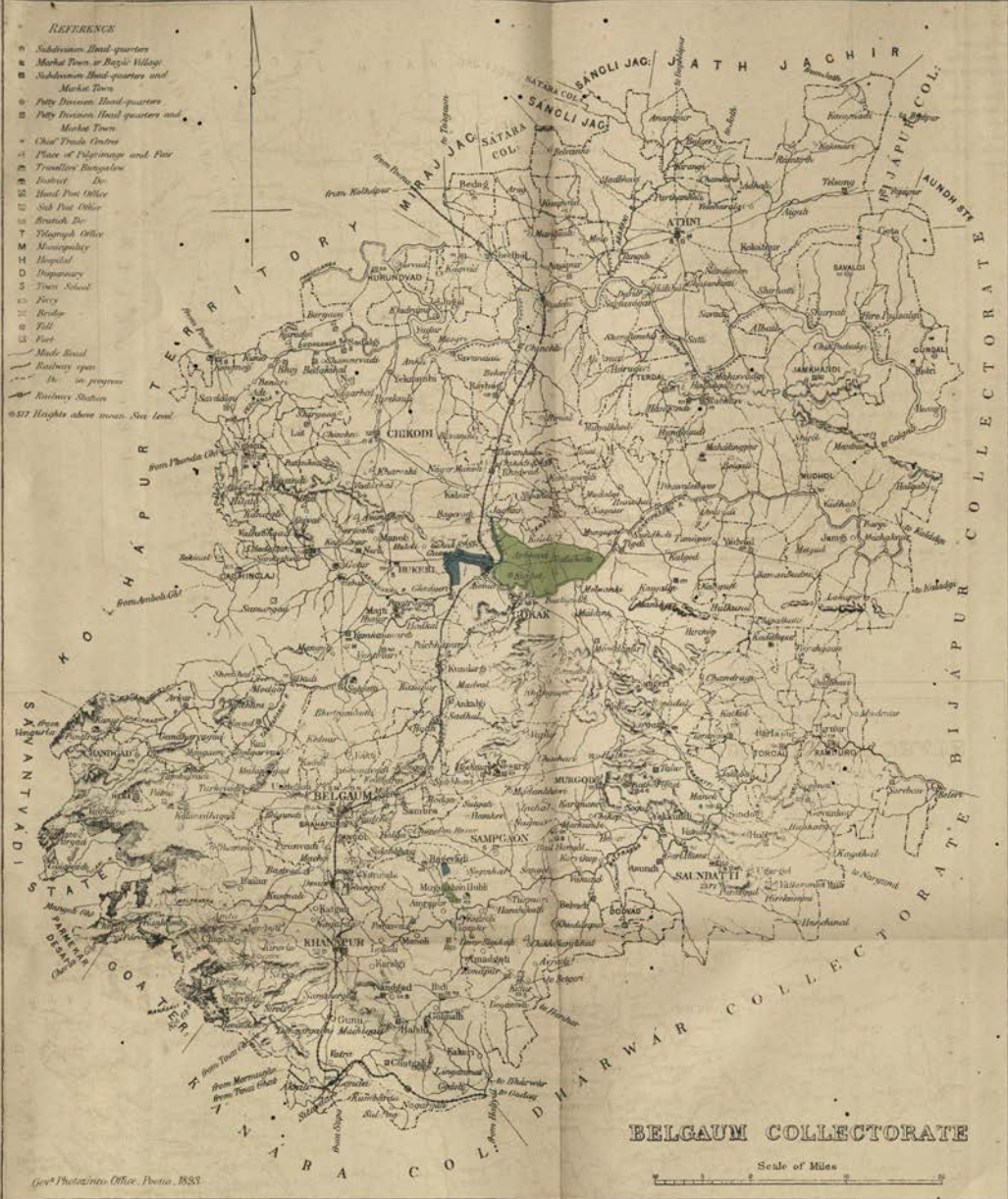
600 Feet heights where means Sea level



REFERENCE

- 1 Subdivision Head-quarters
- 2 Market Town or Bazar Village
- 3 Subdivision Head-quarters and Market Town
- 4 Petty Division Head-quarters
- 5 Petty Division Head-quarters and Market Town
- 6 Chief Trade Centres
- 7 Place of Pilgrimage and Fair
- 8 Travellers Bungalow
- 9 Jail
- 10 Head Post Office
- 11 Sub Post Office
- 12 British Res.
- 13 Telegraph Office
- 14 Municipality
- 15 Hospital
- 16 Dispensary
- 17 Town School
- 18 Ferry
- 19 Bridge
- 20 Fall
- 21 Post
- 22 Made Road
- 23 Railway open
- 24 Do. in progress
- 25 Railway Station

537 Heights above mean Sea Level



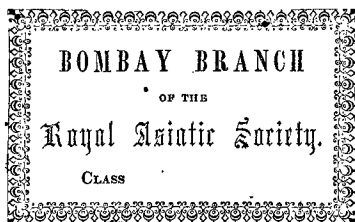
BELGAUM COLLECTORATE

Scale of Miles

IRRIGATION REVENUE REPORT
OF THE
BOMBAY PRESIDENCY
EXCLUDING SIND,
1893-94.

PARTS I & II.





IRRIGATION REVENUE REPORT

OF THE

BOMBAY PRESIDENCY

EXCLUDING SIND,

1893-94.

PARTS I & II.



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IRRIGATION REVENUE REPORT, BOMBAY PRESIDENCY (EXCLUDING SIND),

1893-94.

PART I.

COMPRISING WORKS FOR WHICH CAPITAL AND
REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

The following list includes all the works in operation,
36 in number:—

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
		<i>MAJOR WORKS.</i>	
		<i>Protective Works.</i>	
Poona ...	1	Nira Canal ...	Storage lake at Bhatghar nearly completed.
Sholápur ...	2	Mhasvad Tank ...	Completed, except a part of the waste weir which still requires raising.
		<i>Productive Works.</i>	
Ahmedabad ...	5	Háthmati Canal ...	Storage works under consideration.
Khándesh ...	6	Lower Pánjhra River Works.	Storage Tank at Mukti complete.
Násik ...	7	{ Kadva River Canal. Works }	{ Pálkhed Canal. Ojhar Tánbhat Canal. Wadálí Canal. }
Ahmednagar ...	8	Pravara River Works—Lákh Canal.	Wághad Tank completed with the exception of the waste weir.
			Máládevi Tank proposed for this work, but sanction withdrawn pending enquiry into modified proposals for the dam, and alternative proposals for a tank at Samrad, revised survey of which is completed and the plans, &c., advanced.
Poona ...	9	Mutha Canals ...	Lake Fife at Khadakvásla complete.
Sholápur ...	10	Ekrúk Tank ...	Complete.
Sátára ...	11	Krishna Canal ...	Site for a storage reservoir is under consideration.
		<i>MINOR WORKS AND NAVIGATION.</i>	
Ahmedabad ...	12	Khari Cut ...	The Bokh project under consideration.
	13	Hartála Tank ...	Complete.
	14	Mhasva do. ...	Do.
Khándesh ...	15	Jámda Canals ...	Reservoir at Chankápur sanctioned and commenced, but work suspended for want of funds.
	16	Parsul Tank ...	Complete.
Ahmednagar ...	17	Pravara River Works—Ojhar Canal.	Vide remark against (8) Lákh Canal.
	18	Bhátodi Tank ...	Complete.

Collectorate.	Number.	Names of Works.	Storage Works completed or proposed.
MINOR WORKS AND NAVIGATION—continued.			
Poona' ...	19	Mátoba Tank...	Complete.
	20	Kásurdi do. ...	Do.
	21	Shirsuphal Tank ...	Do.
	22	Bhádálvádi do. ...	Do.
Sholápur ...	23	Koregaon do. ...	Do.
	24	Ashti do. ...	Do.
Sátára ...	25	Revári Canal ...	Storage Tank at Sonkeh proposed.
	26	Upper Mán River Works ...	Pingli Tank complete.
	27	Yerla River Irrigation Works ...	Nehr Tank complete.
	28	Chikhli Canal ...	No storage works yet proposed but being considered.
	29	Maini Tank ...	Complete.
Bijápur ...	30	Muchkundi Tank ...	Do.
	31	Nilgund do. ...	Do.
Belgaum ...	32	Gadikeri do. ...	Do.
Dhárwár ...	33	Dámbal do. ...	Do.
	34	Medleri do. ...	Do.
	35	Madag do. ...	Do.
	36	Asundi do. ...	Do.
	37	Mávinkop do. ...	Do.
<i>Provincial.</i>			
Belgaum ...	39	Gokák Canal, 1st Section ...	Storage works at Dhupdal completed for the present.

Nos. 3, and 4, or Chankápur and Máladevi Tanks, are not included, as the works were not in operation; the former has been suspended and the latter has not yet been approved. No. 38—Gokák Canal, 2nd Section, is in abeyance.

2. The total capital outlay during and up to the end of the year was as follows :—

Main Heads.	To end of 1892-93.	During 1893-94.	To end of 1893-94.
<i>A.—Direct Charges.</i>	Rs.	Rs. *	Rs.
I.—Works ...	1,92,86,842	3,66,883	1,96,53,725
II.—Establishment ...	44,16,041	49,033	44,65,074
III.—Tools and Plant ...	5,00,307	658	5,00,965
IV.—Suspense ...	.....	.....	.....
Profit and Loss ...	.....	.....	.....
Total A ...	2,42,03,190	4,16,574	2,46,19,764
<i>Deduct—Receipts on Capital Account</i>	35,061	48	35,109
Net Total, A.—Direct Charges ...	2,41,68,129	4,16,526	2,45,84,655
<i>B.—Indirect Charges.</i>			
Capitalization ...	3,59,695	2,681	3,62,376
Loss by Exchange ...	.....	.....	.....
Leave and Pension Allowances ...	7,88,896	6,863	7,95,759
Total, B.—Indirect Charges ...	11,48,591	9,544	11,58,135
Grand Total A and B ...	2,53,16,720	4,26,070	2,57,42,790

3. The following abstract shows the details of the above:—

	Number of Works.	EXPENDITURE, 1893-94.			Total Expenditure, Direct and Indirect, to end of 1893-94.	Amount of sanctioned Estimates.
		Direct.	Indirect.	Total.		
<i>Major Works.</i>		Rs.	Rs.	Rs.	Rs.	Rs.
Protective Works { In operation ...	2	1,21,169	4,155	1,25,324	73,95,337	82,32,709
{ In abeyance ...	2	233	6	239	1,03,123	17,42,810
Total ...	4	1,21,402	4,161	1,25,563	74,98,465	99,75,519
Productive Works ... In operation ...	7	1,28,503	3,757	1,32,265	1,07,51,943	1,08,45,341
Minor Works ... { In operation ...	26	31,944	1,676	33,560	61,25,617	68,91,169
{ In abeyance ...	1	...	...	...	1,90,284	1,91,995
Total ...	27	31,944	1,676	33,560	63,15,901	65,83,164
Provincial Minor Works...In operation...	1	1,54,672	10	1,54,682	11,73,481	12,27,669
Grand Total ...	38	4,16,526	9,544	4,26,070	2,57,42,790	2,86,31,693

* Including expenditure charged to "35. Construction of Protective Irrigation Works."

The number of works in operation is 36, the same as in the previous year. The Chankāpur and Mālādevi Tanks and the Gokāk Canal 2nd Section are still in abeyance. A report on the subject of accepting Provincial responsibility for resuming work on the Chankāpur Tank has been received and is under the consideration of Government. The question of storage works for the development of irrigation under the Lakh and Ojhar Canals is still under the consideration of the local officers, and their report on the subject is awaited.

The greater portion of the Capital outlay during the year was on the Nira, Mutha and Gokāk Canals.

On the Nira Canal the work done was chiefly at Bhātghar. The masonry of the dam was all completed. Hand-railing on the coping at the top of the dam and the lifting gear for the large under-sluices were fixed; 15 of Reinold's patent automatic gates were erected and hung with counter weights before water was stored, and their working was tested. There was some work carried out at Vir and distributaries Nos. 59 and 35 A were practically completed. On the Mutha Canals the works which were commenced and had made good progress by the end of March consisted of 5 new settling tanks, converting the 4 old settling tanks into filter beds, converting 3 old filters into pure water tanks, roofing in the pure water tanks, and alterations in the pumping machinery. On the Gokāk Canal the expenditure was for land compensation and other miscellaneous work.

The irrigable area under command of the Nira Canal at the close of the previous year was 171,868 acres and the first 15 miles of the large distributary No. 59 had been opened. During the year under review the remaining length of the distributary, viz. 8 miles and 1,986 feet, was brought into operation, adding 11,994 acres to the command, making a total of 183,862 acres.

4. The Interest Account to end of the year stands as follows:—

	AMOUNT.				AMOUNT.		
	Protective Works.	Productive Works.	Total.		Protective Works.	Productive Works.	Total.
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Total Interest charges to end of 1892-93 ...	27,05,169	50,79,828	1,07,84,992	Net Revenue realized to end of 1892-93 ...	13,634	14,80,560	14,76,926
Do. " during 1893-94 ...	2,88,535	4,07,988	6,96,523	Do. " during 1893-94 ...	15,440	2,19,618	2,38,057
					4,515	17,10,178	17,14,993
				Balance net Interest charges to end of 1893-94 ...	29,88,889	67,77,633	97,66,522
Total to end of 1893-94 ...	29,93,704	84,87,811	1,14,81,515	Total ...	29,93,704	84,87,811	1,14,81,515

5. The gross revenue realised from all sources during the year, after deducting refund of revenue (Rs. 3,521), was Rs. 5,73,746, of which Rs. 5,60,767 were direct, and Rs. 12,979 indirect, receipts. The net revenue actually realised was Rs. 2,86,328.

The gross revenue shows an increase of Rs. 28,204, and the net revenue an increase of Rs. 48,564.

6. The gross area under command was 827,627 acres, against 916,753 acres in the previous year. The difference is due to the alteration in the figures for the Nira Canal, those now given being more correct. The net irrigable area was 5,83,897 acres, as compared with 5,71,903 acres in the past year, showing an increase of 11,994 acres, the whole of which was on the Nira Canal.

7. The financial results of the year by main heads were as follows :—

	Areas Irrigated.	REVENUE REALIZED.			Working Expenses.	Net Revenue.
		Direct Receipts.	Share of Land Revenue.	Total.		
<i>Class I.—Works for which Capital and Revenue Accounts are kept.</i>	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Major Works ... { Protective Works	29,786	1,02,556	...	1,02,556	84,107	18,449
... { Productive Works	26,961	3,40,972	7,571	3,48,543	1,28,925	2,19,618
Total ...	55,747	4,43,528	7,571	4,51,099	2,13,032	2,38,067
Minor Works ...	21,016	86,593	5,408	92,001	68,334	23,667
Provincial Minor Works ...	4,287	30,646	...	30,646	6,052	24,594
Total Class I ...	81,000	5,60,767	12,979	5,73,746	2,37,418	2,86,328

The area shown as irrigated includes an area of 1,050 acres on which a consolidated land and water assessment is levied, and which is derived from works on which expenditure on improvements only has been incurred.

8. The figures showing areas irrigated, revenue assessed and realized, and working expenses, as compared with former years, are as follows :—

Years.	Area irrigated.	REVENUE.		Working Expenses.
		Assessment.	Realization.	
	Acres.	Rs.	Rs.	Rs.
1882-83 ...	28,735	2,48,714	2,06,174	1,66,870
1883-84 ...	32,962	2,44,247	2,78,130	1,70,089
1884-85 ...	39,655	2,47,702	2,60,080	1,92,612
1885-86 ...	59,450	2,83,232	2,79,877	2,10,686
1886-87 ...	42,628	3,03,475	3,34,468	2,39,417
1887-88 ...	46,187	3,49,512	3,43,445	2,41,385
1888-89 ...	79,195	4,14,153	3,71,545	2,34,312
1889-90 ...	85,550	4,49,838	4,22,859	2,47,126
1890-91 ...	74,852	4,44,281	4,60,813	2,39,615
1891-92 ...	96,025	5,76,586	5,12,072	2,85,893
1892-93 ...	65,487	4,79,042	5,45,542	3,07,778
1893-94 ...	79,950	5,91,487	5,73,746	2,87,418

There was an increase of 14,463 acres in the total area irrigated as compared with the previous year, but the area was still considerably less than that of 1891-92, though the assessment is larger.

The increase of 14,463 was distributed over the several classes of works as follows :—

			Acres.
Protective works	...	...	6,543
Productive „	...	...	4,002
Minor „	...	...	3,529
Do. Provincial	...	...	389
Total			14,463

Under Protective Works the increase is chiefly on the Nira Canal, that under Productive Works being made up of small increases on several works, the Mutha Canals bringing the largest contribution. Under Minor Works the Khari Cut accounts for an increase of 944 acres and the Ojhar Canal 1,143 acres, the balance being distributed over several other works. None of the Major Works (except the Ekrúk Tank) show any decrease. Under Minor Works the Jámda Canals show a noticeable decrease.

The increase is generally due to scanty and unseasonable rain-fall. That on the Nira Canal was the result of extension of Kharif irrigation in the villages beyond Bárámáñ and, particularly under distributary No. 59 and extra rabi owing to rain having fallen in September and early part of October, very little in November and none in December 1893. While that on the Mutha Canals was due to increase in the area of perennial crops being permissible owing to large supply available in the tank due to late heavy rains in 1892.

Taking the totals of the two seasons there was a decrease on the Ekrúk Tank and the Jámda Canals. The decrease on the Ekrúk Tank was due to the fact that water applications were not received from some of the miles of the perennial canal while the improvement work was being carried out. On the Jámda Canals the decrease in kharif was due to timely rain-fall, and in rabi to extensive cotton sowings in the previous kharif season, which left small areas for rabi crops.

9. The following table contrasts the distribution of rain-fall in each month for the last five years:—

	I.—Works having an unfailing supply.					II.—Works dependent on Local Rain-fall.				
	1889-90.	1890-91.	1891-92.	1892-93.	1893-94.	1889-90.	1890-91.	1891-92.	1892-93.	1893-94.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Kharif.										
June ...	2.49	5.54	2.57	5.33	2.35	2.04	4.29	2.58	3.04	6.92
July ...	4.21	3.32	7.11	6.36	2.05	6.24	2.79	3.88	3.91	3.01
August ...	1.47	3.08	3.03	6.51	4.58	2.31	3.73	3.15	6.56	3.33
September ...	9.52	5.00	2.93	9.13	2.43	10.27	4.80	2.78	7.87	4.04
Total ...	17.69	16.94	15.64	27.33	18.91	20.36	15.61	12.39	26.38	17.33
Rabi.										
October ...	6.70	3.09	3.25	5.14	2.24	7.03	2.45	3.31	3.77	4.13
November ...	0.06	2.70	0.26	0.34	1.16	0.12	3.10	0.13	0.63	0.96
December ...	...	1.17	...	0.02	...	...	1.94	...	...	...
January ...	...	...	...	...	...	...	0.01	...	...	...
Total ...	6.76	6.96	3.51	5.50	3.40	7.15	7.50	4.04	9.40	5.09
Total Kharif and Rabi.	24.45	23.90	19.15	33.33	22.31	28.01	23.11	16.43	35.78	22.42

The rain-fall in the year under report was considerably lighter than that of the previous year in the case of almost all works.

The average in the two seasons, taking all the works together, was 22.74 inches as compared with 33.66 inches in 1892-93.

10. The total area irrigated was distributed as follows:—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1892-93	36,912	28,575	65,487
1893-94	45,300	34,650	79,950

There is an increase under both kharif and rabi. The differences in areas as compared with those of the previous year have been explained in the review of the annual statement of irrigation and rain-fall.

11. The area irrigated was in excess of the area applied for, the figures being 79,950 and 70,761 acres respectively. The difference, as remarked in previous years, is chiefly due to the fact that the cultivators generally apply for less than they actually irrigate, probably from ignorance of what the areas of their holdings are.

12. The state of the collections was as follows:—

	Rs.
Balance of demands unrealized at the commencement of the year.	31,456
Demand of the year—	
Rabi, 1892-93	Rs. 78,695
Kharif, 1893-94	3,38,513
Miscellaneous receipts	1,49,100
	<u>5,60,308</u>
	Total ... 5,97,764
Remissions	190
	<u>Net Total ... 5,97,565</u>
Amount unrealized at the close of the year	33,277
Actual receipts of the year	5,64,288
Add—	
Share of land revenue	12,979
	<u>5,77,267</u>
Deduct—	
Refunds of revenue	3,521
Revenue realized as per paragraphs 5, 7 and 8	<u>5,73,746</u>

The remissions and refunds together amount to Rs. 3,720.

The total amount, Rs. 33,277, unrealized at the close of the year, shows a small increase; this total is made up of the following:—

	Rs.
Mutha Canals	11,532
Krishna Canal	7,924
Khāri Cut	4,878
Kadva River Works... ..	2,095
Ekrūk Tank	1,397
Ojhar Canal	1,247
Jāmda Canals	1,035
Other Works	3,169
Total	<u>33,277</u>

The outstanding balance on the Mutha Canal, which is the highest, includes (Rs. 9,089) assessment for March 1894 on account of water-supply to towns, and this can only be recovered in the current year. Omitting this item the balance represents the unrealized amount on account of irrigation and is too small to call for any explanation. It is reported, however, that measures have been taken for its recovery.

With reference to the heavy balance on the Kadva River Works, it is reported that the rayats from whom the balances were due were absent from their homes till the close of the year, and that the greater portion has since been recovered.

The outstandings on the remaining works in the Central Division are said to be due to late submission of the demand statements to the Revenue authorities in a few cases and to non-payment of the money by the rayats in others. Arrangements for the recovery of the balances are being made by the officers concerned and it is hoped that endeavours will be made in future for the early submission of the demand statements.

The causes of the outstandings on the Khári Cut and the Krishna Canal have not been explained.

13. The total working expenses for the year amounted to Rs. 2,87,418 against Rs. 3,07,778 in the previous year, showing a decrease of Rs. 20,360 distributed as follows:—

	1892-93.	1893-94.	Difference.
	Rs.	Rs.	Rs.
Major Works—			
Protective Works	73,860	84,107	+10,247
Productive Works	1,58,293	1,28,925	—29,368
Total	2,32,153	2,13,032	—19,121
Minor Works and Navigation	69,921	68,334	—1,587
Provincial Minor Works	5,704	6,052	+348
Grand Total	3,07,778	2,87,418	—20,360

Under Major Works, Protective Works show an increase of Rs. 10,247, while Productive Works show a decrease of Rs. 29,368. The working expenses under Minor Works Imperial show a small decrease of Rs. 1,587. The increase under Protective Works is made up of increases on the Nira Canal and Mhasvad Tank. Under Productive Works the Mutha Canals account for a decrease of Rs. 22,037 which must be considered satisfactory.

The working expenses of the Nira Canal include a sum of Rs. 2,790 expended on special repairs, consisting of strengthening the banks by puddled earth cores where they were found to be unsafe or leaky due to the nature of the soil of which they were made. The heavy charges for Tools and Plant are due to the purchase of a pulsometer and portable boiler required for clearing the super-passages of silt. The total working expenses amounted to Rs. 62,047. With 96 miles of main canal in operation this gives a rate of Rs. 646.32 per mile and includes the maintenance of 132 miles of distributaries. The expenditure per acre irrigated was 2.53, a rate which is less than last year, when it was Rs. 3.22 per acre. The increase on the Mhasvad Tank is stated to be due to an Assistant Engineer and a Sub-Engineer being placed in charge of the special repairs to the dam.

Though the Productive Works as a whole show a decrease of Rs. 29,368, there was some increase in the working expenses of the Lakh Canal due to a heavier charge for closing breaches and the special clearance along the 1st. mile of the canal. The increase on the Hāthmati Canal has not been explained.

As expected last year the working expenses of the Mutha Canals during the year under review show considerable improvement. The total expenditure on this account was Rs. 67,211 against Rs. 89,248 in the previous year, including all charges. Out of Rs. 67,211, Rs. 42,334 are debitable to maintenance of irrigation and Rs. 24,877 to maintenance of water-supply, as compared with Rs. 52,245 and Rs. 37,003 in the previous year. The latter amount, i.e. Rs. 24,877, includes expenditure on pumping by water power, working the new steam pumps for trials, and for working them for a few hours once every month to keep them in good working order. There was no necessity to use steam power during the year as the discharge in the canal was sufficient to work the water wheel at all times.

The working expenses of the Ekrúk Tank include Rs. 7,777 on account of improvements which were reported last year as being under construction. The works have been completed and the canal has been brought to its original section and the embankment raised throughout for a length of 2½ miles. The charges on account of maintenance and repairs are less than in the previous year.

The total of the Minor Works in the Central Division shows a decrease of Rs. 6,947, but on some of the works the charges were in excess of those of the previous year due to causes explained below:—

Mhasva Tank.—Due to construction of a new building at Utrud for stores and to give shelter to the karkun and other canal establishment.

Ojhar Canal.—The increase in maintenance and repairs due to additional expense on repairs to breaches and special clearance of the first three miles of the canal and on the consequent establishment and direction percentages.

Kdsurdi Tank.—Due to more silt clearance and to proportionate share of Tools and Plant charged to the work.

In the Southern Division the noticeable increases are Rs. 979 on the Upper Man River Works and Rs. 4,881 on the Maini Tank. The increase in the former case is due chiefly to special repairs costing Rs. 661 executed to the Gondowli bungalow; that in the latter, to the debit to the Revenue Account of the heavy outlay (Rs. 3,550) on the special works, *viz.*, improvements to the flood channel, diversion of Malharpet-Pandharpur road, and canal chaukis.

The increase on the Gokak Canal 1st Section and storage works was due to the share of collection charges in the Civil Department having risen from Rs. 867 to Rs. 1,522 on account of increased realizations which compare as under with the previous year:—

				Realizations.
				Rs.
1892-93	...	...	...	17,461
1893-94	...	...	...	30,646

The percentage of working expenses on gross assessed revenue was 48·59 against 64·2 in the previous year, and the rate per acre was 3·59 against 4·69 in the previous year.

14. The following table contrasts the charges under the principal heads with those of the two previous years:—

					1891-92.	1892-93.	1893-94.
					Rs.	Rs.	Rs.
Works	...	...	...	...	11,951	6,070	13,641
Repairs	...	...	...	...	1,37,598	1,39,710	1,21,787
Establishment	...	...	...	...	98,265	1,19,234	1,04,596
Tools and Plant	...	...	...	...	3,966	3,913	9,482
Total in the Public Works Department					2,51,790	2,68,927	2,49,506
Collection charges					20,242	22,026	23,271
Indirect charges					13,861	16,825	14,641
Total					2,85,893	3,07,778	2,87,418

The above shows a considerable decrease under repair and establishment charges, as compared with the previous year. The establishment charges, divided between 'Direction and Accounts' and 'Executive,' compare as follows with those for the previous year:—

					1892-93.	1893-94.	Difference.
					Rs.	Rs.	Rs.
Direction and Accounts	...	...	...	...	27,939	22,528	—5,411
Executive	...	...	...	...	91,295	82,068	—9,227
Total					1,19,234	1,04,596	—14,638

The charges under Direction and Accounts show a decrease when compared with the figures of the previous year, but they are still largely in excess of those for 1891-92, which as observed last year, is due to the alteration of mode of distribution sanctioned in Government Resolution No. 139A.-I.—1077, dated 13th July 1893.

Of the excess of Rs. 5,569 under Tools and Plant, Rs. 4,105 was on the Nira Canal and Rs. 1,076 on the Mutha Canals. The former, as stated above, is due to the purchase of a pulsometer and portable boiler, the latter has not been explained.

15. The following table gives the details of the working expenses of some of the principal works:—

Names of Works.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.		WORKING EXPENSES TOTAL IN THE PUBLIC WORKS DEPARTMENT.	
		Total Cost.	Per Acre.	Per mile of Main Canal.	Per Acre Irrigated.
		Rs.	Rs. a. p.	Rs.	Rs.
<i>Canals.</i>					
Nira Canal	3.42	2,080	0 1 4	572	2.24
Háthmati Canal	2.46	134	0 0 7	259	1.46
Kádva River Works	3.46	223	0 1 2	287	2.29
Pravara River Works—Lákh Canal.	3.14	29	0 1 4	138	9.29
Mutha Canals	16.83	1,168	0 2 3	645	6.88
Krishna Canal	8.87	1,230	0 4 2	299	2.22
Jámda Canals	4.37	48	0 1 2	208	5.10
Pravara River Works—Ojhar Canal.	2.69	202	0 1 9	330	2.80
Yerla River Works	3.57	527	0 4 4	187	2.68
Upper Mán River Works	4.75	474	0 5 1	262	3.09
Rewári Canal	4.64	217	0 2 7	286	1.06
Chikhli „	5.49	113	0 4 10	120	2.04
<i>Tanks.</i>					
Mhasvad Tank	4.07	1,292	0 3 10	696	3.65
Ekrúk Tank	4.97	490	0 2 8	503	8.36
Bhatodi Tank	3.21	19	0 1 10	789	2.20
Mátoba Tank	9.45	58	0 0 9	115	1.71
Shirsuphal Tank	3.76	51	0 0 10	277	3.80
Bhádalvádi Tank	5.69	43	0 0 10	185	2.36
Maini Tank	4.81	532	0 6 3	779	5.30
Muehkundi Tank... ..	5.00	...	...	67	31.00
Madag Tank	2.73	...	...	88	1.14

The high cost of measurement in the case of the Mhasvad Tank and the Lákh Canal was remarked upon last year. During the year under report it was comparatively less and the Executive Engineer, Sholápur, expresses a hope to still further reduce the rate next year for the Mhasvad Tank.

Compared with the last year the cost of measurement was high in the case of all the works in the Sátára District; the increased cost is due to the fact that in 1892-93, some of the establishment previously charged to Works was charged to Revenue Establishment only during the second half of the year; whereas in the year under review they were charged for the whole of the year. The free assistance of village Mahárs, also, was discontinued and paid labour was employed. The basis on which the cost is calculated appears to be erroneous and should be enquired into.

In the case of the Muehkundi Tank, the area being small no separate measurers were entertained and the work was measured by the gauge kárkún.

On the Madag Canal measurement of the crops was made with the assistance of the canal establishment, hence no separate expenditure was incurred.

16. The indirect receipts, as shown in Statements I—C, IV—C and II—E, were Rs. 12,979. If Rs. 5,647 plus Rs. 41,328 on account of supply to the Poona City = Rs. 46,975, being the difference between the value of water issued from the Mutha Canals at normal rates and the value of water supplied at special reduced rates or gratuitously, be taken credit for in the revenue returns of the work as a book credit and be added to the above amount, the earnings of the year will be Rs. 6,38,462.

The orders of the Government of India regarding the omission of the entry on account of the savings to the Military and other Government departments due to supply of water from the Mutha Canals having come into force from 1st April 1893, the statement of savings attached to the reports of the previous years has not been submitted.

Orders of Government for the transfer of the tanks and wells to the Executive Engineer, Poona District, and to the Military Department were issued,—vide Government Resolution No. 17 W.I.—171, dated the 29th January 1894, Public Works Department, and Government Resolution No. 937, dated the 9th June 1894, Military Department, and the requisite instructions have been given to the Executive Engineer, Poona Irrigation.

Only two tanks in the Poona Cantonment, *i. e.*, the Kerald's Tank opposite St. Paul's Church and the tank opposite St. Mary's Church, were transferred to the Executive Engineer, Poona District, in March 1894, and the cost of their maintenance, Rs. 72-0-11, was adjusted in transfer to that district in the same month.

No tanks and wells were transferred to the Military Department in 1893-94 and the balance of the expenditure incurred on them after deducting the above adjustment, *viz.* Rs. 162-8-7, was charged off to Maintenance and Repair grant for Poona Water-supply as usual. The transfer was effected in August 1894 and there has been no outlay incurred this year on their repairs.

The subject of the charge made to the City Municipality of Poona for water having been considered by this Government, the Government of India were addressed in this Government letter No. 76 W.I.—791, dated 17th May 1892. The Government of India have now accepted the proposals of this Government. The following terms have accordingly been offered to the Municipality :—

(a.)—That Government will be prepared to increase the present canal supply from $7\frac{1}{2}$ to 18 lakhs gallons, provided that the Municipality agree to use canal water only.

(b.)—That the rate at present charged for the daily supply of $7\frac{1}{2}$ lakhs gallons be extended to the whole quantity, subject to a minimum payment of Rs. 20,000 per annum, in lieu of the present annual minimum payment of Rs. 10,000.

(c.)—Government will not accept responsibility for any loss or injury in consequence of damage to works or machinery belonging to, or connected with, the canal, or its supply reservoir, or for any causes (including scarcity of supply) beyond their control.

(d.)—The agreement to be for thirty years.

17. The net assessed revenue of the year, after deducting working expenses, including indirect and all other charges, and neglecting the items, amounting to Rs. 46,975, referred to in the preceding paragraph, was Rs. 3,04,069 as compared with Rs. 1,71,264 in 1892-93.

The details of the assessment were as follows :—

DIRECT REVENUE.				Indirect Revenue.	Total.
	Water Rates.	Other Receipts.	Total.		
<i>Major Works.</i>	Rs.	Rs.	Rs.	Rs.	Rs.
Protective Works ...	1,05,195	2,416	1,07,611	...	1,07,611
Productive Works ...	2,26,606	1,21,252	3,47,858	7,571	3,55,429
Total ...	3,31,801	1,23,668	4,55,469	7,571	4,63,040
Minor Works ...	85,978	10,476	96,454	5,408	1,01,862
Provincial Minor Works ...	11,629	14,956	26,585	...	26,585
Grand Total ...	4,29,408	1,49,100	5,78,508	12,979	5,91,487

18. The water-rates in force during the year are shown in Statement I—F. and were the same as in the previous year, except in the case of the Gokák Canal on which revised rates were sanctioned in Government Resolution No. 69 A. I—556, dated 30th March 1893, for five years from 1st April 1893.

19. The average water-rates per acre of land actually irrigated were :—

	1892-93.	1893-94.
Protective Works...	... 3-44	3-53
Productive Works ...	... 7-86	8-73
Minor Works ...	... 3-58	4-30
Provincial Minor Works	... 2-43	2-74
Average of all taken together...	... 4-90	5-37

20. The water-rate assessments and other receipts compare with those of the previous year as under :—

	1892-93.	1893-94.
	Rs.	Rs.
Water-rates ...	... 3,20,920	4,29,408
Other Receipts—		
Plantations ...	... 3,707	6,198
Water-power ...	... 15,840	20,760
Water-supply to towns ...	... 1,00,670	97,077
Miscellaneous ...	... 25,158.	25,065
	1,45,375	1,49,100
Share of land revenue ...	... 12,747	12,979
	1,58,122	1,62,079
	4,79,042	5,91,487

The above comparison shows an increase under all heads except water-supply to towns and Miscellaneous.

The assessments of water-rates show an increase under almost all works, the most noticeable being that on the Nira and Mutha Canals. Plantations also show a rise, which would have been more remarkable but for the falling off on the Mutha Canals owing to decrease in sale of wood, there being less timber to cut. There was a noticeable increase under this head on the Jāmāda Canals, Rs. 2,809, owing to large sale of full grown trees.

The decrease under water-supply to towns was due to the supply to the City of Poona having been very much less than in the previous year, the stipulated quantity of 750,000 gallons per day, together with the supply from other sources, having proved to be sufficient.

The increase under Water-power is solely on account of the supply to the Gokak Mills.

Crop acreages. 21. The principal crop acreages irrigated during 1892-93 and 1893-94 were as follows :—

	1892-93.	1893-94.	Increase or Decrease.
	Acres.	Acres.	Acres.
Gardens and orchards ...	2,676	3,367	+ 691
Sugarcane ..	8,851	13,063	+ 4,212
Wheat ...	10,768	10,856	+ 88
Rice ...	2,860	5,217	+ 2,357
Maize ...	2,179	2,031	— 148
Jowári ...	5,871	11,604	+ 5,733
Bájri ...	4,871	4,378	— 493
Gram, &c. ...	5,683	5,830	+ 147
Ground-nut...	11,242	16,390	+ 5,148
Condiments...	2,344	2,935	+ 591
Fodder ...	3,956	593	— 3,363

of these the chief crops were :—

	Acres.
Sugarcane ...	13,063
Wheat ...	10,856
Jowári ...	11,604
Bájri ...	4,378
Gram, &c. ...	5,830
Ground-nut ...	16,390

With the exception of maize and fodder there is increase under all the other crops. Of the total decrease of 3,363 acres under fodder 1,992 acres was on the Nira Canal due to good harvest of jowári last year.

The increase in the area of sugar-cane irrigation on the Nira Canal is most noticeable. It rose from 1,639 acres last year to 3,436 acres. The Executive Engineer has mooted the question of limiting the area of this crop in the proposals regarding revision of water-rates which are under consideration, the avowedly protective nature of the work being the reason assigned.

The total estimated value of crops irrigated is shown as Rs. 58,59,742 against Rs. 39,47,775 for the previous year and Rs. 54,44,456 for 1891-92.

22. In Statement I—E, the duty of water on each work, as well as the basis to which the duties were calculated, &c., are shown. The results vary very much on different works; but, as observed in previous years, this is to be expected, as the conditions also vary considerably, and in most of the canals it is necessary to maintain a much larger discharge than is necessary for the area under irrigation owing to the bulk of the land irrigated being frequently situated at the tail of the canal at a long distance from the head-works.

Details of the duty obtained on each canal are given in the body of the report and are generally estimated from the daily discharge observations and the

- known area of the miscellaneous crops under irrigation during the period; the principal results are as follows:—

	Duty in Acres per Cubic Foot per Second.			
	Maximum.	In month of	Minimum.	In month of
Mátoba Tank ...	88.20	February	52.62	April.
Shirsuphal Tank ...	75.19	November.	...	...
Bhádálvádi Tank ...	135.21	June	36.08	April.
	Kharif.		Rabi.	
Mutha Canals ...	55.3		51.4	
Krishna Canal ...	46		19	
Revári Canal ...	38		112	
Upper Mán River Works ...	243		68	
Yerla River Works ...	71		112	
Chikhli Canal ...	68		9	
Maini Tank ...	195		59	
Bhatodi Tank ...	152.83		97.97	

Special experiments to determine the duty of water per acre were carried out on the undermentioned works during the year, with the following results:—

Name of District and Works.	No. of Plot.	Name of Crop.	Quantity of water for one (1) Acre in cubic feet.
Sholápur—			
Mhasvad Tank ...	1	Sugar-cane	357,061
	2	Do.	372,164
	3	Do.	370,558
	4	Ground-nut	49,279
	5	Maize	37,748
	6	Jowári	28,703
	7	Wheat, Jod	63,874

Sholápur—				
Ashti Tank ...	...	{ Sugar-cane ...	...	294,320
		{ Ground-nut ...	...	115,519
		{ Inferior rice ...	...	77,888
Koregaon Tank ...	...	{ Ground-nut ...	...	143,378.5
		{ Jowári ...	...	63,786
Poona District—				
Nira Canal ...	...	Khapla Wheat	...	85,209
Khándesh District—				
Lower Pánjra River Works, village of Nahalod.		{ Peas ...	...	26,233
		{ Wheat ...	...	20,025
Khándesh District—				
Jámda Canals, Kolgaon village	...	{ Gram ...	...	31,044
		{ Wheat ...	...	23,450
Násik District—				
Ojhar Támbat Canal	...	Wheat	...	12,950

There is one observation to be made with regard to the duty of water, which is that ground-nut on the Mhasvad Tank takes only 49,279 cubic feet to mature a crop of one acre, whereas in the same district on the Koregaon Tank it takes 143,378.5 cubic feet. The difference in the quantities at these two places is said to be due to the nature of the soil and the variation in rainfall.

PART II.

WORKS FOR WHICH ONLY REVENUE ACCOUNTS ARE KEPT,
AND AGRICULTURAL WORKS.

23. The following shows a comparison of the figures for the year under report with those for 1892-93 :—

	1892-93.	1893-94.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Area irrigated ...	146,187	147,393	1,206	.....
	Rs.	Rs.	Rs.	Rs.
Revenue receipts ...	5,44,910	5,46,333	1,423	.....
Expenditure ...	1,97,976	2,80,571	82,595	.....
Net revenue ...	3,46,934	2,65,762	.....	81,172

The area irrigated shows an increase of 1,206 acres, and the receipts an increase of Rs. 1,423. Owing to increased expenditure however the net revenue shows a considerable decrease.

24. The following gives some details of expenditure :—

	EXPENDITURE.		COMPARISON.	
	1892-93.	1893-94.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Extensions and improvements ...	29,296	50,917	21,621	.....
Maintenance and repairs ...	34,094	57,346	23,252	.....
Establishment ...	79,133	1,15,825	36,692	.....
Tools and Plant ...	1,042	2,065	1,023	.....
Total ...	1,43,565	2,26,153	82,588	.....
Share of collection charges ...	54,411	54,418	7	.....
Total ...	1,97,976	2,80,571	82,595	.....

The increase under Extensions and Improvements and Maintenance and Repairs shows more extensive operations on second class works. That under establishment is made up of increases in the Ahmedabad, Kaira, Surat, Ahmednagar, Belgaum and Dhárwár districts, that in the Dhárwár District being very considerable.

The increase of establishment charges over those of the previous year in the Belgaum District is partly due to increased expenditure on Works and partly to the actual charge of Salaries and Travelling allowances of the establishment engaged on survey works in 1892-93 and 1893-94. In 1892-93 nothing was charged under Tools and Plant.

In the Dhárwár District the increase on Establishment and Tools and Plant charges is due to less credit on account of percentage transfers on Hubli Water Works. Outlay during the year was about one-half of that of the previous year.

Source of Supply of Water;

[illegible]

Statement of Reservoir Projects in the

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Source of Supply.	Bhatnagar Reservoir, Nira Canal.	Mhaswad Tank.	Lower Pánjhra River Works and Mukti Tank.	Kádwa River Works (Waghad Tanks).	Mutha Reservoir, Lake Fife.	Ekrik Tank.	Hartola Tank.	Mhaswa Tank.	Paraul Tank.	Phátodi Tank.	Mátoba Tank.	Kásurdi Tank.	Nála, Rain-fall and surplus water from Mutha Right Bank Canal.	Kásurdi Nála and Rain-fall.						
	Yelrandi River and Ghát Catchment.	Mán River and Rain-fall.	Local Streams.	Kolran River.	Mutha River and Rain-fall.	Adhela River and Rain-fall.	Local Streams.	Local Streams.	Paraul River.	Mehekri River.										
If supplied by rain-fall.	Area of catchment, Sq. miles ...	128	460	34.2	29	100.00	150	6.80	13.40	17.23	44.0	10.00	6.00							
	Average Annual Rain-fall ... inches ...	145	20.05	23.04	53.13	33.30	32.41	25.93	27.82	21.47	23.76	18.33	20.73							
Contents of tanks between levels of surface of full supply and sill of canal head sluice ...	Millions of cubic feet.	5,500	2,633	242.3	606	(1) 2,679.65 (2) 3,323.30	3,310	134.9	158.5	118.70	154	229	14.5							
Area of surface at full supply ...	Acres and decimals.	3,554	4013.30	509.00	773	(3) 3,623.73 (1) 3,299.24	4,640	472	421	161	315.13	477.46	37.92							
Gross area commanded ...	Acres.	129,045	13,117	(a) ...	94,937	17,152	534	4,647	2,593	15,136	10,700	597								
Culturable do. ...	"	106,214	12,627	(a) ...	49,990	16,941	527	4,075	2,366	12,657	7,133	473								
Area irrigable by complete project ...	"	106,214	12,627	(a) ...	65,000	15,336	415	4,075	2,366	12,124	7,133	473								
Do. at present ...	"	136,214	12,627	(a) ...	40,800	15,320	415	2,693	97	12,124	7,133	473								
Wells supplied by tanks ...	No.	12	...	...	22	...	...	...	...	...	...	...								
Sanctioned Estimate—																				
Direct Charges ...	Rs.	(a) ...	20,24,327	4,44,486	4,67,662	62,14,206	12,23,243	43,850	1,26,813	2,15,366	3,51,767	1,62,000	40,812							
Indirect Charges ...	"	(a) ...	1,03,947	22,774	16,836	2,40,697	1,06,637	26,150	10,202	8,346	26,511	17,500	4,778							
Interest during construction ...	"	(a) ...	6,56,222	4,01,237	2,17,233	34,30,296	8,00,650	...	...	...	...	...	...							
Total Estimate ...	Rs.	(a) ...	27,84,496	3,68,547	7,01,730	98,85,199	21,35,580	75,040	1,40,015	2,33,812	3,73,273	2,10,500	45,590							
Expenditure to end of 1933-34.																				
Direct Charges ...	Rs.	(a) ...	19,81,519	4,38,533	4,37,913	62,42,432	12,23,117	47,948	1,23,781	2,11,542	3,52,885	1,68,138	40,812							
Indirect Charges ...	"	(a) ...	60,733	22,790	11,691	2,32,264	1,12,369	25,434	10,175	7,000	27,023	12,679	4,778							
Interest during construction ...	"	(a) ...	8,50,537	4,01,237	1,79,483	48,01,400	11,75,265	...	...	...	...	...	...							
Total Expenditure ...	Rs.	(a) ...	29,31,730	8,62,510	6,29,027	1,13,66,096	25,15,651	73,382	1,38,956	2,18,572	3,79,707	2,00,727	45,590							
Works as now sanctioned—																				
Dam (earth or masonry) ...	Masonry ...	Earth.	Earth.	Earth.	Masonry.	Earth.	Earth.	Earth.	Earth.	Masonry.	Earth.	Earth.								
Total Height ...	Feet.	(3) 127 (4) 108	79.79	65	95	97.84	76	51	44	62.27	50	48.41	33.45							
Canals ...	Miles.	M. ft.	27-3,569	...	(f) ...	83	48	...	...	...	4	...	...							
Distributaries ...	"	"	66	45	(f) ...	70	...	5.5	7	...	5	17	1.75							
Works completed at end of 1933-34—																				
Dam (height) completed ...	Feet.	(2) ...	79.79	65	93	97.84	76	51	44	62.27	50	48.41	33.45							
Canals ...	Miles.	M. ft.	27-3,569	...	(f) ...	83	48	...	...	...	4	...	...							
Distributaries ...	"	"	(2) 66	45	(f) ...	70	...	5.5	7	...	5	17	1.75							

(1) 244.7 is the reduced level
(2) 248.7 is the height to which

A.

Bombay Presidency, excluding Sind.

(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	REMARKS.
Shirur- phal Tank.	Bhadra- vadi Tank.	Koregaon Tank.	Ashti Tank.	Upper Man River Works (Pangli Tank).	Yerla River Irriga- tion Works (Wahr Tank).	Maini Tank.	Much- kund Tank.	Gadi- keri Tank.	Dimbal Tank.	Medleri Tank.	Madag Tank.	Asundi Tank.	Mavinkop Tank.	Gokak Canal, 1st Section, and Storage Works.				
Minor Tribu- tary of the Rhina River and Rain- fall.	Minor Tribu- tary of the Rhina River and Rain- fall.	Nala and Rain- fall.	Ashti Nala and Rain- fall.	Man River and Rain- fall.	Yerla River and Rain- fall.	Wanga Nala and Rain- fall.	Much- kund Nala and Rain- fall.	Rain- fall.	Rain- fall.	Medleri Nala and Rain- fall.	Kumud- wadi River and Rain- fall.	Rain- fall.	Rain- fall.	Ghatprabha River.				
23-00	23-00	44	92	20-00	59-6	54-00	26	6	43	11	540	23	8-25	1,080	* Exclusive of 29 square miles for Gondoli Tank.			
21-07	23-16	34-62	29-86	10-6	23-23	22-92	23-73	23-64	19-93	21-56	29-63	23-23	39-01	55-00				
865	222	61	1,419	195-240	489-77	188-580	689	27-8	113-664	57-906	54-630	105-506	45-75	701-597				
839-79	835-18	402	2,677	349-4	676-9	380-4	1,659	129	442	169	362	418	170-6	2,272-45	(a) Information supplied in Statement I—A, the tank being only a feeder.			
4,600	3,060		17,982	8,443	11,233	4,876	5,670	687	4,583	1,916	2,235	1,800	687	18,668				
2,500	2,400	Not known.	16,825	7,623	10,650	4,623	5,417	Not known.	4,523	1,952	1,730	1,800	Not known.	17,627				
2,500	2,400		14,478	7,623	10,650	4,623	3,417	450	4,595	1,916	Project not completed. 1930	1,800	665	16,663				
2,500	2,400		14,478	7,618	10,650	4,623	3,417	337	4,525	1,952	1930	1,800	492	16,663	† Area actually irrigated in 1893-94, which therefore has been entered instead of last year's figure 277.			
...	...	...	...	29	18	13	Nil	None.	Un- certain.	Nil.	Nil	Nil.	Nil	None.				
2,09,460	2,14,382	40,731	7,54,250	4,16,341	6,80,448	3,38,000	1,48,200	8,888	61,162	78,237	2,32,263	67,731	27,889	(a).....				
12,822	14,342	1,318	80,677	28,190	47,260	22,492	30,220	350	3,744	5,468	17,144	12,754	3,928	(a).....				
...	...	...	...	...	...	...	...	...	...	...	...	...	...	(a).....				
2,22,282	2,38,734	42,049	8,34,927	4,44,531	7,77,708	8,90,492	1,88,420	9,238	64,906	81,706	2,49,467	80,485	31,817	(a).....	(a) Figures given in State- ment I—A.			
2,00,289	2,18,107	37,923	7,52,179	4,07,421	636,746	3,67,671	1,40,217	8,916	80,847	78,854	1,61,248	60,741	27,612	(a).....				
12,273	14,132	1,366	78,914	22,141	42,857	22,289	18,490	364	3,133	3,088	6,556	1,718	3,235	(a).....				
...	...	...	...	...	...	...	...	...	...	...	...	...	...	(a).....				
2,21,692	2,27,229	39,189	8,31,068	4,29,562	6,78,602	3,89,916	1,58,707	9,279	63,980	81,592	1,67,598	62,419	30,841	(a).....				
Earth.	Earth.	2 dams 1 earth. 1 masonry	Earth.	Earth.	Earth.	Earth.	Masonry	Earth.	Earth.	Earth.	Earth.	Earth.	Earth.	Masonry weir.				
54-32	56-00	71 and 16	57-75	53-50	74	57-23	60	26	42-25	41	100	33-25	30-53	25	‡ 57-75 is correct. 59 in statement of dimension and cost is taken to the nearest foot.			
...	...	31	211	171	28 48	31	54	Nil.	...	...	...	...	...	143	(b) Above lowest foundation.			
12-5	9-75	...	8	61	4 0	7 46	21	Irriga- tor's Channel	3 2	97 85 5 100	...	4 6 585	Irrigator's Channel.	26-55	(c) The main dam completed to full height; the weir brought up to crest level.			
54-32	55-00	71 and 16	57-75	53-50	74 0	57-23	60	20	42-25	41	100	33-25	30-53	25	(d) The tank supplies the Palkhed, Ojhar Tambat and Wadadi canals as noted in Statement I—A.			
...	...	31	211	171	28 48	31	54	Nil.	...	...	...	...	...	21	(e) Includes 321 miles of branch canals.			
12-5	9-75	...	8	61	4 0	7 46	21	Irriga- tor's Channel	3 2	97 85 5 100	...	4 6 585	Irrigator's Channel.	26-55	(f) These figures are reported by the Executive Engineer, Dharwad Irrigation, to be the correct ones as ascertained by actual measurements. — V. J. & Co. printed Com. Report approved of in Government Resolution No. 158-A.I.—1138, dated 16th July 1894.			

of the finished crest of weir.
water is annually impounded at end of monsoon by fixing standards and boards on waste weir crest.

Capital Account of Irrigation Works in Deccan and

Name of Work.	DURING YEAR.									
	Direct Charges.					Indirect Charges.				Grand Total.
	Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalisation.	Leave and Pension Allowances.	Total.	
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.										
PROTECTIVE WORKS.										
<i>In operation.</i>										
1. Nira Canal ...	54,827	18,401	985	1,14,163	3	1,14,160	1,397	2,576	3,973	1,18,133
2. Mhasvad Tank ...	6,174	811	24	7,009	...	7,009	68	114	182	7,191
Total ...	1,01,001	19,212	959	1,21,172	3	1,21,169	1,465	2,690	4,165	1,25,334
<i>In abeyance.</i>										
3. Chankapur Tank ...	232	46	...	278	45	233	...	6	6	239
4. Maladevi do. ...	...	...	...	...	...	...	...	...	...	...
Total ...	232	46	...	278	45	233	...	6	6	239
Total, Protective Works ...	1,01,233	19,258	959	1,21,450	48	1,21,402	1,465	2,696	4,161	1,25,563
PRODUCTIVE WORKS.										
<i>In operation.</i>										
5. Hathmati Canal ...	...	...	...	...	...	...	...	...	...	...
6. Lower Pancha River Works ...	1,127	225	...	1,352	...	1,352	...	31	31	1,383
7. Kdrva River Works ...	1,613	321	...	1,934	...	1,934	...	45	45	1,979
8. Pravara River Works—Lakh Canal ...	252	50	1	303	...	303	...	7	7	310
9. Mutha Canals ...	97,792	22,509	...	1,20,301	...	1,20,301	415	3,151	3,566	1,23,867
10. Ekruk Tank ...	...	...	...	...	...	...	...	...	...	...
11. Krishna Canal ...	4,353	871	...	5,224	...	5,224	...	122	122	5,346
Total, Productive Works ...	1,01,633	23,876	1	1,25,508	...	1,25,508	415	3,342	3,757	1,32,265
Total, Major Works ...	2,03,866	43,134	958	2,47,958	48	2,47,910	1,880	6,038	7,918	2,57,828
MINOR WORKS AND NAVIGATION.										
<i>In operation.</i>										
12. Khari Cut ...	12,424	424	...	2,853	...	2,853	...	59	59	2,912
13. Hartala Tank ...	...	...	...	...	...	...	...	...	...	...
14. Mhasva do. ...	1,536	384	...	1,920	...	1,920	...	54	54	1,974
15. Jandua Canals ...	1,126	225	100	1,451	...	1,451	2,543	31	2,512	1,661
16. Parsul Tank ...	4,115	1,141	433	4,823	...	4,823	...	160	160	4,983
17. Pravara River Works—Ojhar Canal ...	40	8	2	50	...	50	...	1	1	51
18. Bhatodi Tank ...	...	...	...	...	...	...	...	...	...	...
19. Matoba do. ...	...	...	...	...	...	...	...	...	...	...
20. Kasundi do. ...	...	...	...	...	...	...	...	...	...	...
21. Shirsapal do. ...	7,569	1,900	...	9,469	...	9,469	3	266	269	9,738
22. Bhadalvasdi do. ...	1	...	...	1	...	1	...	...	...	1
23. Koregaon do. ...	...	...	...	...	...	...	...	...	...	...
24. Ashti do. ...	56	...	...	56	...	56	183	...	183	239
25. Revári Canal ...	10	3	...	13	...	13	...	...	...	13
26. Upper Man River Works ...	...	...	...	...	...	...	...	...	...	...
27. Yerla River Irrigation Works ...	12,649	2,529	35	15,213	...	15,213	...	354	354	15,567
28. Chikhli Canal ...	...	...	...	...	...	...	...	...	...	...
29. Main Tank ...	...	...	...	...	...	...	...	...	...	...
30. Machkundi Tank ...	...	...	...	...	...	...	8,158	...	8,158	3,158
31. Nilgund do. ...	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do. ...	...	...	...	...	...	...	...	...	...	...
33. Dambal do. ...	...	...	...	...	...	...	...	...	...	...
34. Medleri do. ...	...	...	...	...	...	...	...	...	...	...
35. Madag do. ...	...	...	...	...	...	...	...	...	...	...
36. Asundi do. ...	...	...	...	...	...	...	...	...	...	...
37. Mavinkop do. ...	...	...	...	...	...	...	...	...	...	...
Total ...	26,414	5,830	300	31,944	...	31,944	801	815	1,616	33,560
<i>In abeyance.</i>										
38. Gokak Canal, 2nd Section ...	...	...	...	...	...	...	...	...	...	...
Total, Minor Works and Navigation ...	26,414	5,830	300	31,944	...	31,944	801	815	1,616	33,560
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In operation.</i>										
39. Gokak Canal, 1st Section, and Storage Works ...	1,34,603	69	...	1,34,672	...	1,34,672	...	10	10	1,34,682
Grand Total ...	3,66,383	49,033	658	4,16,574	48	4,16,526	2,681	6,863	9,544	4,26,970

* Including expenditure charged to "35. Construction
† Including Rs. 645 from

Gujarat for and to end of 1893-94.

To END OF YEAR.									
Direct Charges.					Indirect Charges.				Grand Total.
Works.	Establishment.	Tools and Plant.	Total.	Deduct Receipts on Capital Account.	Total.	Capitalization.	Leave and Pension Allowances.	Total.	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
40,74,000	9,97,517	1,31,203	5,202,720	7966	51,94,764	1,397	1,56,024	1,58,321	53,53,085
15,78,825	3,41,392	62,835	19,82,992	1,473	19,81,519	7,817	52,916	60,733	20,42,252
56,52,825	13,38,949	1,94,038	71,85,712	9,429	71,76,283	9,214	2,09,840	2,19,054	73,95,337
38,786	17,981	7,261	64,028	175	63,853	.....	3,159	3,159	67,012
20,967	11,600	1,456	34,023	63	33,960	.....	2,161	2,761	36,116
59,753	29,581	8,717	98,051	243	97,808	.....	5,320	5,320	1,03,128
57,12,578	13,68,430	2,02,765	72,83,763	9,672	72,74,091	9,214	2,15,160	2,24,374	74,98,465
3,83,636	92,517	9,060	4,92,213	1,288	4,90,925	7,640	19,330	27,470	5,18,395
3,61,720	73,692	5,228	4,38,550	37	4,38,513	8,432	14,367	22,799	4,61,312
5,37,980	1,38,961	16,960	6,93,901	140	6,93,761	4,316	24,339	28,655	7,22,416
2,64,016	88,641	19,479	3,52,136	201	3,51,935	5,824	13,621	19,445	3,71,380
51,80,760	9,66,398	1,17,453	62,54,611	12,169	62,42,442	52,502	1,79,762	2,32,264	64,74,696
10,07,089	2,12,609	9,718	12,29,511	1,194	12,28,317	69,948	42,321	1,12,269	13,40,586
6,74,448	1,42,162	1,682	8,18,292	...	8,18,292	17,222	27,824	45,046	8,63,338
84,09,639	16,91,810	1,77,575	1,02,79,024	15,029	1,02,63,995	1,63,884	3,22,064	4,87,948	1,07,51,943
1,41,22,217	30,60,240	3,80,930	1,75,62,787	24,701	1,75,38,086	1,75,098	5,37,224	7,12,322	1,82,50,408
1,35,618	32,298	2,133	1,70,049	181	1,69,868	6,350	5,630	11,980	1,81,848
33,437	11,966	2,579	47,982	4	47,948	23,052	2,382	25,434	73,382
1,01,259	26,399	1,129	1,28,787	6	1,28,781	5,026	5,149	10,175	1,38,956
7,85,135	1,91,689	12,829	9,89,553	21	9,89,532	11,992	37,861	49,853	10,39,385
1,60,892	42,377	8,844	2,11,613	71	2,11,542	1,078	5,952	7,030	2,18,572
2,30,016	75,173	4,533	3,09,722	144	3,09,578	5,806	14,807	20,613	3,30,191
2,73,838	70,183	9,354	3,53,375	690	3,52,685	13,023	13,999	27,022	3,79,707
1,49,237	36,982	2,937	1,89,156	8	1,89,148	5,579	7,000	12,579	2,00,727
31,433	8,495	834	40,812	...	40,812	2,059	1,699	3,758	45,590
1,68,238	38,190	2,881	2,09,259	...	2,09,259	5,041	7,232	12,273	2,21,532
1,56,993	53,493	2,621	2,13,107	...	2,13,107	3,882	10,240	14,122	2,27,229
30,044	7,661	213	37,923	...	37,923	.....	1,266	3,266	39,189
4,06,274	1,44,175	3122	7,57,571	5,392	7,52,179	52,311	26,603	78,914	8,31,093
46,819	9,693	21	56,533	...	56,533	1,066	1,781	2,847	59,380
3,07,494	93,456	6,782	4,07,662	241	4,07,421	4,737	17,354	22,141	4,29,562
5,21,710	1,08,793	7,608	6,38,111	2,365	6,35,746	22,383	20,489	42,857	6,78,603
39,984	13,611	208	53,803	...	53,803	917	27,22	3,639	57,442
2,66,543	98,353	3,315	3,68,211	540	3,67,671	8,074	19,165	22,239	3,89,910
1,13,890	26,360	2,294	1,40,484	267	1,40,217	14,386	4,104	18,490	1,58,707
6,987	1,700	130	8,768	...	8,768	.....	259	259	9,027
7,020	1,755	140	8,915	...	8,915	13	351	364	9,279
49,262	10,769	878	60,909	62	60,847	1,034	2,099	3,133	63,980
61,881	15,324	1,155	78,360	6	78,354	243	2,795	3,038	81,392
1,26,596	31,841	2,825	1,61,262	14	1,61,248	.....	6,350	6,350	1,67,598
48,805	10,881	1,055	60,741	...	60,741	.....	1,718	1,718	62,459
21,665	5,762	323	27,750	138	27,612	2,083	1,752	3,285	30,847
44,77,391	11,66,249	85,778	57,29,418	10,150	57,19,268	1,86,190	2,20,159	4,06,349	61,25,617
92,036	70,024	14,246	1,76,306	...	1,76,306	740	13,233	13,973	1,90,284
45,69,427	12,83,273	1,00,024	59,05,724	10,150	58,95,574	1,86,930	2,33,397	4,20,327	63,15,901
9,62,081	1,68,561	20,611	11,51,253	253	11,50,995	348	25,138	25,486	*11,76,481
1,96,53,725	44,65,074	5,00,965	2,46,19,764	35,109	2,45,84,655	3,62,376	7,98,759	11,58,135	2,57,42,790

of Protective Irrigation Works.
Local Funds.A. L. WRIGHT,
For Examiner, Public Works Accounts.

*Statement showing the Financial Results of Irrigation Works in
Realizations under Main Heads of*

Name of Work.	REVENUE (ACTUAL RECEIPTS).										Revenue	
	Irrigation.			Navigation.	Plantations.	Water-power.	Miscellaneous.	Total.	Refunds of Revenue.	Gross Revenue less Refunds.	Estate	
	Water-rates directly paid.	Share of Land Revenue.	Total.								Direction.	Executive.
2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.												
Protective Works.												
1. Nira Canal ...	76,092	...	76,092	...	28	...	1,419	77,539	10	77,529	3,858	13,344
2. Mhasvad Tank ...	24,027	...	24,027	...	35	...	965	25,027	...	25,027	1,861	7,420
* Total	1,00,119	...	1,00,119	...	63	...	2,384	1,02,566	10	1,02,556	5,219	20,764
Productive Works.												
5. Hathnadi Canal ...	8,530	...	8,530	...	256	...	912	9,698	...	9,698	26	116
6. Lower Panjhra River Works ...	9,960	6,788	16,748	...	125	...	377	17,250	7	17,249	240	884
7. Kadva River Works ...	10,375	594	10,969	...	110	...	790	11,869	...	11,869	524	1,595
8. Pravara River Works— Lakh Canal ...	697	147	844	...	21	...	304	1,169	...	1,169	218	692
9. Mutha Canals ...	1,43,966	42	1,44,008	...	145	6,000	1,01,171	2,51,324	3,404	2,47,920	4,156	11,150
10. Ekruk Tank ...	14,157	...	14,157	...	335	...	9,310	23,802	...	23,802	1,849	6,088
11. Krishna Canal ...	35,418	...	35,418	...	...	...	1,419	36,836	1	36,836	182	1,765
Total	2,23,103	7,571	2,30,674	...	992	6,000	1,14,283	3,61,948	3,406	3,48,543	7,220	22,291
Total, Major Works	3,23,222	7,571	3,30,793	...	1,055	6,000	1,16,067	4,54,515	3,416	4,51,099	12,439	43,055
MINOR WORKS AND NAVIGATION.												
12. Khazri Cut ...	7,329	...	7,329	...	40	...	518	7,887	...	7,887	67	527
13. Hartala Tank ...	245	...	245	...	542	...	419	1,206	...	1,206	14	189
14. Mhasva do. ...	347	...	347	...	446	...	628	1,421	...	1,421	141	448
15. Jandva Canals ...	6,422	...	6,422	...	3,519	...	417	10,358	...	10,358	617	1,848
16. Parsul Tank ...	1,339	...	1,339	...	...	...	8	1,347	...	1,347	53	337
17. Pravara River Works— Ohar Canal ...	2,648	76	2,724	...	6	...	444	3,174	...	3,174	512	1,462
18. Bhadodi Tank ...	4,860	1,361	6,221	...	48	...	354	6,593	13	6,580	266	797
19. Matoda do. ...	10,348	...	10,348	...	2	...	...	10,350	...	10,350	136	273
20. Kasurdi do. ...	333	...	333	...	...	...	189	522	...	522	24	62
21. Shirsuphal do. ...	3,414	...	3,414	...	...	...	90	3,504	6	3,498	268	823
22. Bhadalvadi do. ...	4,118	...	4,118	...	...	...	54	4,172	13	4,159	131	413
23. Koregaon do. ...	1,015	...	1,015	...	...	...	9	1,024	...	1,024	53	277
24. Ashti do. ...	3,952	...	3,952	...	245	...	104	4,301	...	4,301	861	1,501
25. Revarti Canal ...	5,207	...	5,207	...	...	...	148	5,355	7	5,348	24	394
26. Upper Man River Works	6,618	...	6,618	...	...	...	118	6,736	...	6,736	74	613
27. Yerla River Irrigation Works	5,842	...	5,842	...	...	...	762	6,604	7	6,597	85	691
28. Chikhli Canal ...	2,028	...	2,028	...	...	...	104	2,132	...	2,132	12	101
29. Maini Tank ...	6,970	...	6,970	...	...	...	101	7,071	...	7,071	87	537
30. Muchkundi do. ...	54	...	54	...	206	...	155	417	...	417	3	16
31. Nilgund do. ...	...	...	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do. ...	1,987	...	1,987	...	...	...	...	1,987	59	1,928	...	...
33. Dambhal do. ...	745	666	1,411	...	23	...	294	1,728	...	1,728	7	120
34. Medleri do. ...	350	...	350	...	...	...	2	352	...	352	9	104
35. Madag do. ...	1,849	...	1,849	...	...	...	209	2,118	...	2,118	13	117
36. Asundi do. ...	390	472	822	...	...	...	64	886	...	886	11	103
37. Mavinkop do. ...	...	856	856	...	...	...	5	861	...	861	...	...
Total, Minor Works and Navigation	76,393	5,408	81,791	...	5,079	...	5,236	92,106	105	92,001	2,958	11,482
PROVINCIAL.												
Minor Works and Navigation.												
39. Gokak Canal, First Section and Storage Works	10,770	...	10,770	...	64	19,680	132	30,646	...	30,646	78	899
GRAND TOTAL	4,10,375	12,979	4,23,354	...	6,198	25,680	1,32,035	5,77,267	3,521	5,73,746	15,475	55,436

Notes.—(1) The Irrigation share of the Land Revenue Assessment relates to the Revenue year 1893-94.

(2) The division of establishment charges between Revenue Management and Maintenance is made in accordance

C.

Deccan and Gujarat for the year ending 31st March 1894.

Revenue and Working Expenses.

WORKING EXPENSES.															
Management.			Maintenance and Repairs.												
Navigation.		Total Revenue Management.	Establishment.				Works.	Repairs.	Sundries.	Tools and Plant.	Plantations.	Total Cost of Maintenance.	Indirect Charges.	Grand Total Working Expenses.	Net Revenue.
Navigation.	Civil Officers.		Director.	Executive.	Medical.	Total.									
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
...	3,805	21,007	1,485	5,186	...	6,621	150	25,117	...	4,601	1,216	37,705	3,335	62,047	15,482
...	1,237	10,018	323	1,764	...	2,087	791	7,243	...	85	514	10,520	1,522	22,060	2,967
...	5,042	31,025	1,808	6,900	...	8,708	941	32,360	...	4,686	1,530	48,225	4,857	84,107	18,449
...	426	568	185	828	...	1,013	...	3,679	218	13	372	5,295	162	6,025	3,673
...	1,489	2,613	87	318	...	405	182	1,169	...	100	289	2,125	214	4,952	12,297
...	547	2,667	232	705	...	937	...	3,530	...	119	217	4,803	427	7,897	3,972
...	50	985	100	325	...	425	...	1,651	...	127	45	2,251	190	3,426	-2,257
...	7,173	22,479	2,108	5,654	...	7,762	...	30,577	...	2,693	470	41,502	3,230	67,211	1,80,709
...	709	8,646	760	2,470	...	3,220	7,777	4,177	...	101	98	16,203	1,562	26,411	-2,609
...	1,943	3,890	151	1,473	...	1,624	...	5,899	403	91	606	8,613	500	13,003	23,833
...	12,337	41,348	3,618	11,773	...	15,386	7,939	50,675	621	3,244	2,927	80,792	6,285	1,28,925	2,19,618
...	17,379	72,873	5,421	18,673	...	24,094	8,380	83,035	621	7,930	4,467	1,29,017	11,142	2,13,932	2,38,067
...	366	960	79	624	...	708	...	2,802	...	45	10	3,560	132	4,702	3,185
...	33	236	1	18	...	19	...	75	...	...	...	94	81	361	645
...	29	618	59	189	...	248	553	284	...	50	154	1,289	117	2,024	-603
...	311	2,776	277	831	...	1,108	53	4,484	...	100	...	5,689	500	8,915	1,443
...	67	457	11	68	...	79	...	262	...	50	56	447	660	970	377
...	142	2,116	163	675	...	845	...	3,228	...	84	143	4,298	394	6,808	-3,634
...	379	1,442	130	357	...	477	...	1,819	...	105	62	2,490	216	4,145	2,432
...	517	926	95	192	...	287	...	1,143	...	113	5	1,348	97	2,571	7,779
...	17	193	13	33	...	46	...	186	...	113	...	344	18	465	57
...	171	1,252	109	345	...	454	606	1,203	...	113	9	2,385	215	3,852	-354
...	206	750	55	175	...	230	...	913	...	113	7	1,263	108	2,121	2,038
...	51	311	18	70	...	88	...	354	...	20	...	463	49	832	202
...	109	2,031	125	477	...	602	...	2,148	...	59	262	3,061	345	5,440	-1,139
...	257	475	25	213	...	235	...	906	...	12	48	1,204	64	1,743	3,805
...	330	1,017	81	676	...	757	...	2,857	...	115	171	3,902	200	5,119	1,617
...	292	1,063	100	805	...	905	...	3,113	...	119	507	4,644	235	5,947	650
...	105	218	15	117	...	132	...	508	...	12	25	672	54	924	1,208
...	319	973	181	1,125	...	1,306	3,550	1,486	...	52	190	6,584	270	7,857	-756
...	3	21	11	59	...	70	...	233	...	4	47	354	12	587	30
...	199	...	4	...	...	20	...	82	...	...	...	102	...	394	1,624
...	117	244	3	44	...	47	55	190	...	...	...	292	24	560	1,168
...	17	130	6	68	...	74	...	297	...	...	...	371	26	537	-175
...	92	222	14	118	...	132	...	438	...	...	91	661	37	920	1,193
...	63	179	13	103	...	116	60	414	...	...	...	580	82	791	95
...	86	86	...	...	...	...	...	...	...	...	...	...	...	86	775
...	4,370	18,810	1,533	7,398	...	8,931	4,761	29,418	...	1,270	1,817	46,247	3,277	63,334	23,667
...	1,522	2,499	49	561	...	610	...	2,227	...	282	212	3,331	222	6,052	24,594
...	23,271	94,182	7,053	26,632	...	33,685	13,641	1,14,680	621	9,482	6,486	1,78,695	14,641	2,87,415	2,86,328

with the orders contained in Government of India No. 98 A.L., dated 10th August 1894.

A. L. WRIGHT,

For Examiner of Public Works Accounts.

II.—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarât for the year 1893-94, based on actual Receipts.

Principal Results of Operations for the year ended 31st March 1894.

Irrigation Works.	Direct and Indirect Capital Outlay to end of 1893-94.	Gross Receipts, Direct and Indirect, from all sources.	Working Expenses, Direct and Indirect.	Net Revenue (excluding charges for Interest).	Percentage of net Revenue on Capital Outlay to end of year.	Interest at 4 per cent. on Direct Capital Outlay at commencement of year and at 2 per cent. on Outlay during year.	SURPLUS REVENUE AFTER PAYING INTEREST ON DIRECT CAPITAL OUTLAY.		EXCESS CHARGES INCLUDING INTEREST, ON DIRECT CAPITAL OUTLAY.	
	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.	Amount.	Percentage on total sum at charge.
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.										
MAJOR WORKS.										
Protective Works.										
<i>In Operation.</i>										
1. Nira Canal	53,53,085	77,529	62,047	16,482	29	2,05,607	...	...	1,90,025	2'67
2. Mhasvad Tank	20,42,252	26,927	22,060	2,967	15	79,121	...	...	70,154	2'67
Total	73,95,337	1,02,556	84,107	18,449	25	2,84,028	...	...	2,68,179	2'67
<i>In Abeyance.</i>										
3. Chankhner Tank	67,012	.....	.....	.....	...	2,540	...	...	2,540	2'66
4. Malsdevi do.	36,116	.....	.....	.....	...	1,358	...	...	1,358	2'67
Total	1,03,128	.....	.....	.....	...	3,907	...	...	3,907	2'73
Total Protective Works	74,98,465	1,02,556	84,107	18,449	25	2,88,435	...	...	2,70,086	2'67
Productive Works.										
<i>In Operation.</i>										
5. Hathmati Canal	5,18,305	9,898	6,023	3,873	71	19,637	...	...	15,984	1'23
6. Lower Panjhra River Works	4,61,832	17,349	4,933	12,407	2'67	17,514	...	...	5,217	7'71
7. Kadva River Works	7,22,446	11,869	7,587	3,973	45	27,712	...	...	28,740	2'19
8. Pravara River Works—Lâkh Canal	3,71,830	1,169	3,420	2,257	41	14,983	...	...	16,340	2'05
9. Mutha Canals	64,74,686	2,47,920	67,211	1,80,709	2'79	2,47,291	...	...	60,532	1'70
10. Eruk Tank	13,40,586	25,852	26,411	2,509	19	40,124	...	...	51,733	1'69
11. Krishna Canal	6,03,383	36,836	13,003	23,833	2'76	32,627	...	...	8,794	'56
Total, Productive Works	1,07,51,943	5,45,543	1,28,923	2,18,618	2'94	4,07,988	...	...	1,88,370	1'09
Total, Major Works	1,82,50,408	4,51,099	2,13,030	2,39,067	1'30	4,96,423	...	...	4,58,456	1'67
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
12. Khari Cut	1,51,646	7,837	4,709	3,185	1'75	6,738	...	...	3,553	1'48
13. Hartala Tank	78,832	1,206	861	845	4'15	1,918	...	...	1,073	1'06
14. Mhasra do.	1,39,956	1,421	2,024	603	43	5,190	...	...	5,793	2'51
15. Jandla Canals	10,39,885	10,858	8,915	1,443	14	38,623	...	...	38,109	1'73
16. Parsul Tank	2,18,572	1,347	970	377	17	8,365	...	...	7,988	2'94
17. Pravara River Works—Ojhar Canal	3,20,191	3,174	6,808	3,634	1'10	12,234	...	...	16,018	2'82
18. Bhâstodi Tank	3,78,707	6,580	4,149	2,432	74	14,107	...	...	11,675	1'72
19. Mitoha do.	2,00,727	10,350	2,571	7,779	3'88	7,226	233	0'10	...	...
20. Kasurdi do.	45,590	522	465	67	13	1,633	...	...	1,570	1'65
21. Shirsapal do.	2,31,662	2,468	3,852	315	18	8,152	...	...	5,836	2'51
22. Bhâdvalâdi do.	2,27,229	4,159	2,121	2,038	90	5,524	...	...	6,486	1'29
23. Koregaon do.	90,189	1,024	822	202	52	1,617	...	...	1,315	2'08
24. Ashni do.	8,31,803	4,301	5,440	1,139	14	30,080	...	...	31,225	2'47
25. Bendat Canal	66,850	5,343	1,743	5,605	6'07	2,261	1,244	1'25	...	...
26. Upper Man River Works	4,29,562	6,738	5,119	1,617	38	18,297	...	...	14,680	2'12
27. Yerla River Irrigation Works	6,75,003	6,587	5,847	650	10	25,126	...	...	24,476	2'24
28. Chikhi Canal	57,442	2,132	924	1,208	2'60	5,162	...	...	944	'82
29. Misni Tank	3,89,910	7,071	7,827	756	19	14,707	...	...	15,463	2'22
30. Muchkundi Tank	1,58,707	417	887	30	02	5,609	...	...	5,579	2'29
31. Nilgund do.	9,027	.....	.....	.....	...	251	...	...	351	2'70
32. Godikeri do.	9,279	1,928	304	1,634	17'50	837	1,307	...	...	...
33. Dâmbal do.	83,980	1,723	180	1,168	1'33	2,434	...	...	1,266	1'36
34. Medheri do.	81,292	332	527	175	21	3,131	...	...	3,503	2'63
35. Madag do.	1,87,585	2,113	820	1,188	71	6,450	...	...	5,322	1'51
36. Asundi do.	62,450	836	791	95	15	2,430	...	...	2,335	2'68
37. Navinkop do.	30,847	861	86	775	2'51	1,104	...	...	328	'56
Total	61,25,617	92,001	68,334	23,667	'38	2,28,124	...	...	2,04,467	2'00
<i>In Abeyance.</i>										
38. Gokâk Canal, 2nd Section	1,90,284	.....	.....	.....	...	7,052	...	...	7,052	2'36
Total, Minor Works and Navigation	63,15,901	92,001	68,334	23,667	'38	2,35,186	...	...	2,11,519	2'01
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
<i>In Operation.</i>										
39. Gokâk Canal, 1st Section, and Storage Works	11,76,481	30,646	6,052	24,594	2'09	43,346	...	...	18,753	1'35
GRAND TOTAL	2,67,42,790	5,73,716	2,87,418	2,86,328	1'11	9,75,055	...	...	6,83,247	1'75

*The sum at charge being minus, no percentage can be calculated.

A. L. WRIGHT,

For Examiner, Public Works Accounts.

III.—C.

Demands and Realizations during the year 1893-94 in Deccan and Gujarát.

Irrigation Works.	Balance of demands unrealized at commencement of year.	DEMANDS OF THE YEAR.				Total, including balance at commencement of year.	Deduct—Remissions not including Cash Refunds.	Net Total.	Deduct—Amount unrealized at close of year.	Actual realizations of the year.
		Rabi, 1893-94.	Kharif, 1893-94.	Miscellaneous Receipts.	Total.					
1	2	3	4	5	6	7	8	9	10	11
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.										
<i>Protective Works.</i>										
1. Nira Canal	745	17,162	58,264	1,418	76,534	77,579	...	77,579	40	77,539
2. Mhasvad Tank	2,635	4,560	17,168	998	22,716	25,351	...	25,351	324	25,027
Total	3,380	21,722	75,412	2,416	99,550	1,02,930	...	1,02,930	364	1,02,566
<i>Productive Works.</i>										
5. Hathmati Canal	102	4,698	4,069	1,168	9,935	10,037	...	10,037	339	9,698
6. Lower Panjhra River Works	192	(b) 3,332	6,901	502	10,735	(a) 10,927	...	10,927	465	10,462
7. Kaldra River Works	1,088	5,947	5,411	924	12,282	(a) 13,370	...	13,370	2,096	11,275
8. Pravara River Works—										
Lakh Canal	...	182	515	333	1,030	(a) 1,030	...	1,030	8	1,022
9. Mutha Canals	15,708	6,349	1,34,014	1,06,912	2,47,905	(a) 2,65,013	199	2,62,814	11,532	2,51,282
10. Ekruk Tank	1,012	2,155	12,038	9,904	24,187	25,199	...	25,199	1,397	23,802
11. Krishna Canal	815	7,909	34,913	1,419	44,246	44,761	...	44,761	7,924	36,837
Total	18,517	30,572	1,97,896	1,21,252	3,49,720	3,68,387	199	3,68,188	23,700	3,44,478
Total, Major Works	21,997	52,294	2,76,308	1,23,668	4,49,270	4,71,267	199	4,71,068	24,124	4,46,944
MINOR WORKS AND NAVIGATION.										
12. Khari Cut	2,205	213	9,789	558	10,560	12,765	...	12,765	4,878	7,887
13. Hartala Tank	...	195	50	961	1,206	1,206	...	1,206	...	1,206
14. Mhasva do.	...	227	120	1,074	1,421	1,421	...	1,421	...	1,421
15. Jámda Canals	21	3,075	4,360	3,937	11,372	11,393	...	11,393	1,035	10,358
16. Parsul Tank	...	1,066	253	8	1,347	...	...	1,347	...	1,347
17. Pravara River Works—										
Ojhar Canal	310	1,409	2,022	604	4,035	(a) 4,345	...	4,345	1,247	3,093
18. Bhatodi Tank... ..	446	1,872	3,076	390	5,338	(a) 5,784	...	5,784	542	5,242
19. Matoba do.	—2	616	9,734	2	10,352	10,350	...	10,350	...	10,350
20. Kasurdi do.	...	202	131	189	522	522	...	522	...	522
21. Shirsuphal do.	...	1,255	2,159	90	3,504	3,504	...	3,504	...	3,504
22. Bhadaivadi do.	...	484	3,654	54	4,172	4,172	...	4,172	...	4,172
23. Koregaon do.	...	598	477	9	1,084	1,084	...	1,084	...	1,084
24. Ashi do.	890	1,209	2,697	347	4,953	4,843	...	4,843	542	4,301
25. Revári Canal	27	2,717	2,463	148	5,338	5,355	...	5,355	...	5,355
26. Upper Man River Works	...	1,585	5,133	118	6,836	6,836	...	6,836	100	6,736
27. Yerla River Irrigation Works	103	3,688	2,076	762	6,526	6,629	...	6,629	25	6,604
28. Chikhli Canal	7	306	1,724	104	2,134	2,141	...	2,141	9	2,132
29. Maini Tank... ..	166	2,068	4,862	101	7,031	7,197	...	7,197	126	7,071
30. Muchkundi do.	...	...	54	363	417	417	...	417	...	417
31. Nilgund do.	...	...	...	...	...	...	...	...	...	...
32. Gadikeri do.	...	...	...	...	...	(a) ...	...	...	...	...
33. Dambal do.	...	116	629	317	1,062	(a) 1,062	...	1,062	...	1,062
34. Medleri do.	...	68	282	2	352	352	...	352	...	352
35. Madag do.	435	1,134	796	269	2,199	2,634	...	2,634	518	2,115
36. Asundi do.	188	120	175	64	559	(a) 547	...	547	133	414
37. Mávinop do.	...	...	...	5	5	(a) 5	...	5	...	5
Total, Minor Works and Navigation	4,496	24,183	56,696	10,476	91,355	95,851	...	95,851	9,153	86,698
PROVINCIAL.										
MINOR WORKS AND NAVIGATION.										
39. Gokak Canal, 1st Section, and Storage Works	4,963	2,218	8,509	14,966	25,653	30,646	...	30,646	...	30,646
GRAND TOTAL	31,456	78,695	3,38,513	1,49,100	5,66,308	5,97,764	199	5,97,565	33,277	5,64,283

(a) Exclusive of irrigation share of consolidated assessment.

(b) Inclusive of Rs. 2,121 on account of rabi of 1893-94 shown in Canal Return No. IX.

A. L. WRIGHT,
For Examiner, Public Works Accounts.

IV.—C.

Statement showing the Financial Results of Irrigation Works in Deccan and Gujarāt for the year ended 1893-94, based on the Assessment of the year.

Principal Results and Operations for the year ended 31st March 1894.

Irrigation Works.	Capital Outlay (Direct and Indirect) to end of year.	REVENUE ASSESSED DURING THE YEAR.										Working Expenses, Direct and Indirect.	Net Assessed Revenue of the year.	Percentage on Capital Outlay to end of year.
		Direct Assessed Revenue (a).								Indirect Revenue—(Land Revenue due to operation of Canal) (b).	Grand Total.			
		Occupier's Rate.	Owner's Rate.	Plantations.	Water-power.	Navigation.	Miscellaneous.	Total.						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
IMPERIAL.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
MAJOR WORKS.														
Protective Works.														
1. Mira Canal	53,53,083	83,703	...	23	...	...	1,300	85,121	...	85,121	62,047	23,074	43	
2. Mhasvad Tank	30,42,252	21,403	...	35	...	...	903	22,490	...	22,490	22,060	430	02	
Total	78,26,337	1,05,195	...	63	...	...	2,383	1,07,611	...	1,07,611	84,107	23,504	32	
Productive Works.														
5. Hāthnashī Canal	5,13,305	9,058	...	255	...	...	912	10,256	...	10,256	6,025	4,231	82	
6. Lower Panjira River Works	4,61,332	10,557	...	125	...	...	377	11,053	6,758	17,847	4,952	12,895	70	
7a Kadva River Works	7,22,416	10,474	...	110	...	...	814	11,493	504	11,992	7,397	4,595	37	
8. Pravara River Works—Lākh Canal	3,71,390	1,073	...	21	...	...	332	1,413	145	1,558	3,426	1,868	50	
9. Mutha Canals	64,14,096	1,35,503	...	145	6,000	...	1,00,907	2,45,874	62	2,45,936	67,271	1,78,705	74	
10. Ekruhi Tank	18,40,339	14,854	...	335	...	...	418	24,353	...	24,353	26,411	2,052	75	
11. Krishna Canal	8,68,339	42,053	...	...	...	...	1,419	43,502	...	43,502	13,003	30,499	53	
Total	1,07,61,943	2,38,906	...	992	6,000	...	1,14,260	3,47,858	7,571	3,55,429	1,28,925	2,26,504	210	
Total, Major Works	1,81,47,280	3,51,801	...	1,055	6,000	...	1,16,613	4,55,469	7,571	4,63,040	1,28,032	2,60,068	138	
MINOR WORKS AND NAVIGATION.														
12. Khāri Cut	1,21,849	9,916	...	40	...	...	518	10,474	...	10,474	4,702	5,773	317	
13. Hartala Tank	73,382	269	...	542	...	...	419	1,227	...	1,227	361	866	118	
14. Mhasra do.	1,33,966	545	...	446	...	...	632	1,333	...	1,333	3,034	401	99	
15. Kanda Canals	10,30,335	6,820	...	3,619	...	...	418	10,587	...	10,587	8,915	1,672	16	
16. Parsul Tank	2,13,672	1,413	...	...	...	...	8	1,426	...	1,426	970	456	21	
17. Pravara River Works—Ojhar Canal	3,20,191	4,890	...	8	...	...	598	6,634	75	6,710	5,608	1,102	93	
18. Bhatodi Tank	7,79,707	5,172	...	48	...	...	342	5,562	1,351	6,913	4,148	2,765	73	
19. Mātoba do.	2,00,727	10,790	...	2	...	...	180	10,792	...	10,792	2,571	8,221	410	
20. Kāsurli do.	45,590	339	...	...	...	...	90	3,390	...	3,390	3,852	228	15	
21. Shirsuphal do.	2,21,602	3,436	...	...	...	...	54	4,403	...	4,403	2,121	2,282	100	
22. Bhādalvadi do.	2,27,229	4,940	...	...	...	...	194	2,137	...	2,137	924	1,213	211	
23. Koregaon do.	39,189	1,007	...	...	...	...	9	1,016	...	1,016	522	494	50	
24. Ashi do.	8,31,083	3,860	...	245	...	...	102	4,307	...	4,307	5,440	1,133	15	
25. Revzri Canal	59,580	6,260	...	...	...	...	143	6,405	...	6,405	1,748	4,656	758	
26. Upper Man River Works	4,20,562	7,071	...	...	...	...	178	7,139	...	7,139	5,119	2,020	49	
27. Yerla River Irrigation Works	6,73,913	3,886	...	...	...	...	702	7,748	...	7,748	5,947	1,801	27	
28. Chikili Canal	37,442	2,033	...	...	...	...	104	2,137	...	2,137	924	1,213	211	
29. Maini Tank	3,89,910	6,533	...	...	...	...	101	6,635	...	6,635	7,827	1,192	31	
30. Muchkundi Tank	1,56,707	60	...	208	...	...	155	423	...	423	387	86	02	
31. Vilgund do.	9,027	...	...	...	...	...	...	...	1,387	1,387	804	1,083	1818	
32. Gadikeri do.	63,880	679	...	23	...	...	204	495	680	1,662	560	1,102	172	
33. Medheri do.	61,362	410	...	...	...	...	2	412	...	412	827	115	14	
35. Madag do.	1,67,508	1,892	...	...	...	...	280	2,191	...	2,191	920	1,271	74	
36. Asundi do.	63,450	291	...	...	...	...	64	365	472	827	791	36	06	
37. Marinkop do.	39,547	...	...	...	...	...	5	5	866	861	86	775	261	
Total, Minor Works and Navigation	61,25,617	85,978	...	5,079	...	...	5,397	96,454	5,408	1,01,862	68,334	33,528	65	
PROVINCIAL.														
MINOR WORKS AND NAVIGATION.														
39. Gokak Canal, First Section, and Storage Works	11,76,481	11,620	...	84	14,760	...	132	26,585	...	26,585	6,052	20,533	175	
GRAND TOTAL	3,54,49,378	4,29,408	...	6,198	20,760	...	1,22,142	5,78,508	12,979	5,91,487	2,87,418	3,04,069	119	

(a) Excluding remissions shown in canal Return No. V, for Kharif and Rabi seasons of 1903-04.
(b) Irrigation share of the land revenue assessment.

A. L. WRIGHT,
For Examiner, P. W. Accounts.

STATEMENT I-E.

Statement of Areas irrigated by Irrigation Works in the Bombay

No.	Name of Canal.	AREA IRRIGATED IN ACRES.							AVERAGE DISCHARGES, CUBIC FEET PER SECOND.			
		Kharif.	Rabi.	Total.	Flow.	Lift.	Double-cropped.		At Head.		Utilized.	
							Area irrigated.	Percentage of Total Area.	Kharif.	Rabi.	Kharif.	Rabi.
1	2	3	4	5	6	7	8	9	10	11	12	13
MAJOR WORKS.												
Protective Works.												
1	Nira Canal	13,556	10,947	24,503	24,442	61	...	...	252	296	208	280
2	Mhasvad Tank... ..	8,907	1,376	5,233	5,244	39	625	11.83	102.72	73.70	102.72	73.70
	Total	17,463	12,323	29,786	29,686	100	625	2.10	...	...	...	...
Productive Works.												
5	Hathmati Canal	1,269	2,442	3,701	3,663	38	...	...	70	75	32	35
6	Lower Pánjira River Works	1,558	7,442	3,000	2,995	5	42	1.40	9.23	15.34	9.23	15.34
	Waghad Tank.	665	1,439	2,104	2,091	13	12	0.67	18.21	24.87	9.64	14.50
7	Kadwa River	174	364	588	593	...	5	0.93	2.36	4.4	2.03	3.39
	Ojhar Tambat Canal.	185	200	385	384	1	1	0.26	6.56	6.17	3.94	3.70
8	Pravara River Works—Lakh Canal.	76	267	343	333	20	3	0.87	23.31	19.34	18.09	17.58
9	Mutha Canals	5,634	1,622	8,259	8,198	61	847	10.25	151.99	141.15	Not obtainable; allowed to run into Matoba Tank.	
10	Ekrak Tank	2,247	642	2,889	2,853	36	74	2.56	44.96	54.41	44.96	54.41
11	Krishna Canal	2,810	1,932	4,742	4,026	716	15	0.32	61.19	102.01	55	71
	Total	15,608	10,353	25,961	25,071	890	999	3.84	...	...	...	...
	Total, Major Works	33,071	22,676	55,747	54,757	990	1,624	2.91	...	...	...	...
MINOR WORKS AND NAVIGATION.												
32	Khari Cut	1,760	26	1,786	1,698	88	...	...	11.57	0.75	8.14	2.08
13	Hafala Tank	11	107	118	117	1	5	4.21	0.56	1.26	0.56	1.26
14	Mhasva do.	18	211	229	223	1	2	0.87	1.54	2.71	1.54	2.71
15	Jamda Canals	508	1,030	1,538	1,588	...	78	4.91	58.19	66.59	55.19	66.59
16	Parul Canal	69	280	359	363	1	44	12.26	1.42	2.24	1.12	2.24
17	Pravara River Works—Ojhar Canal.	362	1,391	2,243	2,221	22	31	1.38	31.69	40.99	25.70	36.18
18	Bhatodi Tank	648	965	1,613	1,588	25	56	3.47	4.24	9.85	4.24	9.85
19	Matoba do.	732	4.0	1,142	1,142	...	146	12.75	9.06	10.35	9.06	10.85
20	Kasurdi do.	41	83	124	124	...	23	18.55	...	...	...	...
21	Shirsuphal do.	475	438	9.3	913	...	151	16.54	8.46	7.27	8.46	7.27
22	Bhadaivadi do.	487	277	764	764	...	108	14.14	4.95	5.54	4.95	5.54
23	Koregonn do.	94	263	352	351	1	...	0.87	2.81	10.25	0.87	2.81
24	Ashti do.	711	487	1,198	1,187	11	151	12.60	10.25	12.62	10.25	12.62
25	Hewri Canal	313	1,136	1,348	1,343	5	25	1.85	5.65	10.15	5	8
26	Upper Man River Works	942	518	1,460	1,484	6	161	10.81	3.67	3.07	2	4
27	Yera River Irrigation Works.	424	1,634	1,958	1,945	73	67	3.47	5.94	13.39	2	6
28	Chikhli Canal	291	79	370	368	2	8	0.81	4.25	8.55	3	4
29	Maini Tank	866	493	1,359	1,339	20	63	4.64	4.43	8.37	4	6
30	Machkundi Tank	10	2	12	12	...	...	...	...	...	...	...
31	Nilgund do.	...	...	...	...	...	...	...	...	...	...	...
32	Gadikeri do.	*337	...	*337	...	...	...	...	...	...	...	...
33	Dámbal do.	110	17	127	127	...	...	...	1.82	1.76	All utilized except leakage in canal.	
34	Medleri do.	*97	...	*97	...	...	...	...	...	...	...	...
35	Medleri do.	76	21	96	80	16	...	...	0.26	0.19	...	...
36	Madag do.	318	374	692	692.	...	...	...	3.74	8.76	...	...
37	Asundi do.	60	25	85	76	9	...	...	0.64	1.21	...	...
	...	*124	...	*124	...	...	...	...	...	...	...	...
37	Mávinkep do.	*492	...	*492	...	...	...	...	...	...	...	...
	Total	9,215	10,751	19,966	19,745	221	1,115	5.58	...	...	...	...
	...	*926	*124	*1,050	...	...	...	...	...	...	...	...
PROVINCIAL.												
29	Gokak Canal, 1st Section ...	3,014	1,223	4,237	4,152	85	...	...	15.16	20.67	Approximately all.	
	...	1,108	...	...	...	...	...	...	...	...	...	...
	GRAND TOTAL	45,800	34,650	79,950	78,664	1,286	2,739	3.42	...	...	...	...
	...	*826	*124	*1,050	...	...	...	...	...	...	...	...

E.

Presidency, excluding Sind, during the year 1893-94.

AREA IRRIGATED PER CUBIC FOOT PER SECOND.				BASE TO WHICH THE DUTIES OF WATER ARE CALCULATED.		REMARKS.
Discharged at Head.		Utilized.		Kharif.	Rabi.	
Kharif.	Rabi.	Kharif.	Rabi.			
14	15	16	17	18	19	20
53.79 38.03	36.93 18.67	65.17 38.03	39.10 18.67	16th January to 15th October. 16th January to 15th October.	16th October to 15th January. 16th October to 15th January.	
...	...	...	...			
17.93 168.80	32.56 94.00	39.35 168.80	69.77 94.00	1st June to 30th September... April to September ...	1st October to 31st December. October to January.	
...	...	...	...			
50.34 60.84	57.86 75.21	68.98 85.71	99.24 107.37	} 1st June to 15th October ... June to September ...	} 16th October to end of February. October to January.	
53.05 3.26	58.33 13.81	88.92 4.20	98.11 15.19			
43.65	11.27	Not obtainable.		16th January to 15th October.	16th October to 15th January.	
49.97 46	11.79 19	49.97 51	11.79 27	16th January to 15th October. 16th January to 14th October.	Do. 15th October to 14th January.	
...	...	...	...			
...	...	...	...			
152.12 19.64 11.69 8.73 48.59 11.11	34.66 84.92 77.86 16.22 129.46 46.13	216.21 19.64 11.69 8.73 49.69 13.70	12.5 84.92 77.86 16.22 129.46 52.27	July to October ... April to September ... June to September ...	November to February ... October to January. October to January.	† Besides this, water was used for 242 acres of land assessed on the Chāndola Tank which have not been accounted for.
152.83 80.79	97.97 37.79	152.83 80.79	97.97 37.79	16th January to 15th October 16th January to 15th October 1893.	16th October to 15th January. 16th October to 15th January 1894.	
...	...	...	...	15th January to 14th October.	15th October to 14th January.	
56.14 98.38 108.04 69.36 38 243 71 63 195	60.25 50.00 91.81 38.59 112 68 112 9 59	56.14 98.38 108.04 69.36 42 470 232 97 516	60.25 50.00 91.81 38.59 142 187 255 19 82	No experiments made.		
Not known	...	Not known.	...	...	...	
...	...	...	...	...	...	
113	(a) 32	Not known.		} 16th January to 15th October.	} 16th October to 15th January.	* Area on which consolidated assessment is levied.
288	(b) 216	Do.				
85	(c) 44	Do.				
111	(d) 124	Do.				
...	...	...	...	...	...	
...	...	...	...	...	...	
198	112	198	112	16th January to 15th October.	16th October to 15th January.	
...	...	...	...			

† During rabi season 8 months and perennial crops are irrigated. The area of this is included in kharif, but must be added to rabi area to get duty of water.
 (a) In the rabi season 39 acres of perennial crops were irrigated in addition to the 17 acres shown in the statement and this has been taken into calculation.
 (b) Do. 20 " do. 21 " do.
 (c) Do. 15 " do. 374 " do.
 (d) Do. 1 " do. 149 " do.

Statement showing Incidence of Working Expenses and Assessed Water Revenue

No.	Name of Work.	Average Discharge of the year at Canal Head in Cubic Feet per Second.	WATER-RATE ASSESSED.					Gross assessed Revenue from all Sources.	Working Expenses, Direct and Indirect.
			Occupier's.	Owner's.	Total Direct.	Indirect.	Total Direct and Indirect.		
			Rs.		Rs.	Rs.	Rs.	Rs.	Rs.
MAJOR WORKS.									
<i>Protective Works.</i>									
1	Nira Canal	255	83,703	...	83,703	...	83,703	85,121	62,047
2	Mhasvad Tank	95.48	21,492	...	21,492	...	21,492	22,490	22,060
	Total ...		1,05,195	...	1,05,195	...	1,05,195	1,07,611	84,107
<i>Productive Works.</i>									
5	Háthmati Canal	69	9,088	...	9,088	...	9,088	10,256	6,025
6	Lower Pánjra River Works	10.45	10,557	...	10,557	6,788	17,345	17,847	4,952
7	Kádva River Works	...	...	...	...	...	...	...	...
		Wághad Tank	...	...	...	...	...	...	...
		Páikhed Canal	19.02	7,245	...	594	7,839	8,593	4,860
		Ójhar Tánbhat Canal	3.84	1,923	...	...	1,923	1,935	940
8	Pravara River Works—Lákh Canal	3.17	1,306	...	1,306	...	1,306	1,388	1,178
9	Mutha Canals	20.76	1,078	...	1,078	147	1,225	1,558	2,426
10	Ekrak Tank	148.07	1,38,962	...	1,38,962	42	1,39,004	2,45,916	67,211
11	Krishna Canal	48.54	14,364	...	14,364	...	14,364	24,358	26,411
	Total ...	62.30	42,083	...	42,083	...	42,083	43,502	18,003
	Total, Major Works ...		2,26,606	...	2,26,606	7,571	2,34,177	3,55,429	1,23,925
	Total, Major Works ...		3,31,801	...	3,31,801	7,571	3,39,372	4,68,040	2,13,032
MINOR WORKS AND NAVIGATION.									
12	Khátri Cut	6.57	9,916	...	9,916	...	9,916	10,474	4,702
13	Hartála Tank	0.99	266	...	266	...	266	1,227	361
14	Mhasva Tank	2.30	549	...	549	...	549	1,623	2,024
15	Jámda Canals	59.60	6,630	...	6,630	...	6,630	10,567	8,915
16	Parsul Tank	1.71	1,418	...	1,418	...	1,418	1,426	970
17	Pravara River Works—Ójhar Canal	34.28	6,030	...	6,030	76	6,106	6,710	6,808
18	Bhatodi Tank	6.36	5,172	...	5,172	1,351	6,523	6,913	4,148
19	Matoba do	8.95	10,730	...	10,730	...	10,730	10,739	2,671
20	Kásurdi do	...	339	...	339	...	339	528	465
21	Shirsuphal do	7.86	3,436	...	3,436	...	3,436	3,526	3,852
22	Bhádálvádi do	5.25	4,349	...	4,349	...	4,349	4,403	2,121
23	Koregaon do	1.35	1,007	...	1,007	...	1,007	1,016	822
24	Ashti do	10.84	3,860	...	3,860	...	3,860	4,207	5,440
25	Revári Canal	5.69	6,260	...	6,260	...	6,260	6,408	1,743
26	Upper Mán River Works	3.71	7,071	...	7,071	...	7,071	7,189	5,119
27	Yerla River Irrigation Works	6.55	6,986	...	6,986	...	6,986	7,748	5,947
28	Chikhli Canal	4.60	2,033	...	2,033	...	2,033	2,137	924
29	Maini Tank	4.64	6,534	...	6,534	...	6,534	6,635	7,827
30	Machkundi do	Not known.	60	...	60	...	60	428	387
31	Nitgund do	...	...	...	...	1,987	1,987	...	...
32	Gadikeri do	...	...	...	...	666	1,345	1,987	304
33	Dámhal do	1.51	679	...	679	...	679	1,662	560
34	Medleri	0.24	410	...	410	...	410	412	527
35	Madag	5.01	1,892	...	1,892	...	1,892	2,161	920
36	Asundi	0.61	291	...	291	472	763	827	791
37	Mávinkep	...	...	...	...	856	856	861	86
	Total ...		85,978	...	85,978	5,408	91,386	1,01,662	68,334
PROVINCIAL.									
39	Gokak Canal, 1st Section, and Storage Works	17.91	11,629	...	11,629	...	11,629	26,585	6,052
	GRAND TOTAL ...		4,29,408	...	4,29,408	12,979	4,42,387	5,91,487	2,87,418

E.

on Canals in the Bombay Presidency, excluding Sind, during the year 1893-94.

Area irrigated during the year 1893-94.	WORKING EXPENSES.			OCCUPIER'S RATE.		TOTAL WATER-RATE, DIRECT AND INDIRECT.		Remarks.
	Per cent. on Gross Revenue.	Per Acre irrigated.	Per Cubic Foot per Second of Discharge at Canal Head.	Per Acre irrigated.	Per Cubic Foot per Second of Discharge at Canal Head.	Per Acre irrigated.	Per Cubic Foot per Second of Discharge at Canal Head.	
Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
24,503	73	2.53	243	3.42	328	3.42	328	
5,283	98	4.18	231	4.07	225	4.07	225	
29,786	78	2.82	.....	3.53	.....	3.53	.....	
3,701	58.74	1.63	87.32	2.46	131.71	2.46	131.71	
3,000	23	1.65	474	3.51	1,010	5.78	1,639	
2,104	12.09	.....	.....	.....	.....	.....	.....	
538	57	2.31	255	3.44	331	5.73	412	
385	49	1.75	245	3.57	501	3.57	501	
343	85	3.06	371	3.39	412	3.39	412	
5,259	220	9.99	165	3.14	52	3.57	59	
2,889	27	8.14	454	16.33	938	16.33	939	
4,742	108	9.14	544	4.97	303	4.97	303	
25,961	30	2.75	208	3.87	675	3.87	675	
55,747	36.23	4.96	.....	3.73	.....	9.02	.....	
1,786	44.88	2.63	716.68	5.55	1509.44	5.55	1,509.44	
118	29	3.06	364	2.25	269	2.25	269	
229	125	8.84	880	2.40	239	2.40	239	
1,588	84	5.61	150	4.17	111	4.17	111	
359	63	2.70	567	3.95	329	3.95	329	
2,243	101	3.04	193	2.69	175	2.73	178	
1,613	60	2.57	652	3.21	813	4.04	1,025	
1,142	24	2.25	287	9.45	1,206	9.45	1,206	
124	88	3.75	.....	2.73	.....	2.73	.....	
913	109	4.22	490	3.76	437	3.76	437	
764	43	2.78	404	5.69	828	5.69	828	
352	81	2.33	609	2.85	745	2.85	745	
1,198	129	4.51	301	3.22	356	3.22	356	
1,948	27	1.29	308	4.64	1,100	4.64	1,100	
1,490	71	3.44	1,380	4.75	1,906	4.75	1,906	
1,933	77	3.04	309	3.57	1,067	3.57	1,067	
370	45	2.49	201	5.49	442	5.49	442	
1,359	118	5.76	1,637	4.81	1,408	4.81	1,408	
12	91	32	Not known.	5.00	Not known.	5	Not known.	
337	18	.....	.....	.....	.....	.....	.....	
127	33.69	4.41	309	5.35	375	6.00	743	
97	.....	2.5	.....	.....	.....	.....	.....	
96	127.91	5.5	2,196	4.27	1,708	4.27	1,708	
692	42.57	1.33	183	2.73	377	2.73	377	
85	95.64	9.31	1,297	3.42	477	3.65	1,251	
124	.....	13.78	.....	.....	.....	.....	.....	
492	6.77	0.17	.....	.....	.....	.....	.....	
19,966	67.08	3.42	.....	4.30	.....	4.59	.....	
1,050	.....	.....	.....	.....	.....	.....	.....	
4,337	22.76	1.43	337.91	2.74	649	2.74	649	
79,950	48.59	3.59	.....	5.37	.....	5.54	.....	
1,050	.....	.....	.....	.....	.....	.....	.....	

* On total area of 324 acres.
Do. 239 acres.
† Areas on which consolidated assessments are levied.

Statement of Quantity and Value of Crops irrigated in the Bombay, excluding Sind, during the year 1893-94.

	(1) NIRA CANAL.			(2) MEHSAVAD TANK.			(5) ELDEHARI CANAL.			(6) LOWER PANCHERA RIVER WORKS.			(7) KAVYA RIVER WORKS.			(8) PANVANA RIVER WORKS-JALAH CANAL.			(9) MUTHA CANAL.		
	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.	Area irrigated.	Estimated Value.	Rs.
Gardens and Orchards ... { Vegetables ... { Fruit and other trees	121	1,747	96	...	1,990	...	78	1,225	...	75	2,625	...	805	...	35	7	123	...	212	...	3,518
Sugarcane ...	125	11,585	62	4,050	...	53	36,783	...	21	1,155	...	4	220	...	56	28	3,464	...	631	...	73,184
...	3,496	8,13,282	410	1,02,500	...	37	2,650	...	70	5,093	...	211	31,650	...	47	7,080	...	30	4,800	...	18,39,015
...	2,932	38,354	638	18,840	...	716	21,480	...	841	12,218	...	860	24,080	...	203	5,824	...	68	2,380	...	16,621
...	10	134	38	380	...	341	8,625	...	...	...	...	15	625	...	...	...	...	...	...	...	374
...	197	2,765	101	3,890	...	1,525	598	...	63	902	...	...	...	...	1	70	...	...	...	...	162
...	1,769	1,612	322	3,230	...	265	375	...	98	187	...	...	...	...	2	16	...	...	...	...	176
...	6,537	1,36,495	442	6,630	...	447	11,175	...	1	11	...	...	...	...	...	...	...	...	...	...	85
...	18	97	67	870	...	340	...	...	...	...	...	2	20	...	2	...	...	...	...	...	39
...	3,860	18,313	34	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	14
...	7	125	...	...	...	12	...	...	...	...	...	14	140	...	20	...	...	...	...	...	364
...	1,914	26,371	198	3,960	...	857	21,425	...	28	410	...	146	2,628	...	27	456	...	21	378	...	10,639
...	11	111	11	220	...	...	...	...	4	71	...	...	...	...	...	...	...	30	960	...	57
...	1	5	...	...	...	...	...	...	447	3,604	...	529	21,160	...	...	...	...	...	...	...	47
...	5,311	1,55,500	2,936	1,26,300	...	...	...	...	546	19,272	...	141	60	...	6	60	...	...	...	...	2
...	...	...	...	...	...	...	...	...	1	10	...	12	120	...	...	...	...	...	...	...	47
...	89	1,627	113	5,660	...	...	...	...	2	35	...	11	198	...	6	108	...	1	18	...	19
...	...	...	...	...	...	...	...	...	1	16	...	1	60	...	...	...	...	...	...	...	703
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28,652
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III—E—continued.

xxxi

	(19) MATOBA TANK.		(20) KAJURDI TANK.		(21) SHIRUPHAL TANK.		(22) BHADALVADI TANK.		(23) KORGGAON TANK.		(24) ASERI TANK.		(25) BHAVARI CANAL.		(26) UPPER MAP RIVER WORKS.		(27) YERLA RIVER IRRIGATION WORKS.		(28) CHITRELI CANAL.	
	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.	Area irrigated.	Estimated Value.
	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.	Acrea.	Rs.
Gardens and Vegetables...	9	58	5	...	1	45	...	2	80	1	40	...	5	50	47	1,150	16	340	6	276
Orchards ... Fruits and other trees	6	879	...	...	32	4,829	14	2,695	...	...	14	1,400	68	2,850	2	96	31	1,350	17	1,180
Sugarcane ...	540	2,12,820	3	640	157	56,123	301	1,11,491	50	15,000	80	24,000	97	37,460	108	10,360	17	2,159	38	6,315
Cereals ...	Wheat	9,237	21	439	221	8,305	89	3,235	6	150	224	5,600	128	3,840	269	3,546	321	6,420	26	865
	Barley	...	...	...	1	39	...	1,107	13	325	22	5,500	...	...	...	...	...	...	...	...
	Rice	...	2	43	17	260	8	67	...	...	33	700	19	475	16	544	2	50	6	220
	Maize	...	...	...	...	...	...	1,369	164	2,462	370	3,400	110	2,900	...	...	...	...	...	...
	Other Cereals, Ragi, Rada, Wari...	1,450	44	873	94	1,112	1	8	...	...	6	40	30	11,220	295	4,124	396	13,860	...	282
Pulses ...	Peas	...	...	...	...	...	...	3,366	9	189	...	80	...	...	...	...	...	...	...	...
	Ground-nut	...	...	...	...	...	...	3,842	...	...	19	950	...	...	...	...	...	...	...	...
Fodder Crops...	Gram, Udid, Mung...	1,076	11	175	144	2,373	46	665	2	50	174	475	4	48	106	1,590	148	2,960	12	300
	Peas	...	...	...	...	...	...	...	...	...	3	75	...	...	...	...	...	...	...	...
Fibres ...	Cotton	...	...	...	...	...	...	115	78	3,120	251	11,240	651	26,040	439	26,400	925	34,225	...	...
	Tag (Hemp)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drugs and Narcotics	Tobacco	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Bhang	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oil-seeds	Mustard, Sesam	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Linseed, Castor-oil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments ...	Chilly and Onions...	1,024	6	67	20	571	19	473	6	240	28	1,120	16	800	39	1,032	33	1,550	30	1,960
Miscellaneous...	Garlic, Turneric and Mehi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Land insufficiently irrigated ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1,143	2,31,564	124	2,952	913	78,392	764	1,26,671	332	23,480	1,198	53,320	1,348	68,663	1,490	50,645	1,955	64,293	370	22,980

* The area is 10 gumbas only.

Area on which consolidated assessment is levied ...

	(29) MAIN TANK.		(30) MUCHKUNDI TANK.		(32) GADIKERI TANK.		(33) DAMAD TANK.		(34) MEDHARI TANK.		(35) MADAG TANK.		(36) ARUNDI TANK.		(37) MAYNEKOP TANK.		(39) GOKA'S CANAL 1ST SECTION, AND STORAGE WORKS.		TOTAL.	
	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.	Area irrigated.	Estimated value.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.
Gardens and Vegetables	64	1,290	1	24	...	...	35	600	2	70	77	3,850	31	1,590	...	...	213	10,650	1,351	46,555
Orchards.	26	1,312	2	24	...	...	8	600	27	1,430	...	...	1	63	...	...	45	4,500	1,956	1,72,046
Fruits and other trees	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sugarcane	77	15,400	2	100	...	...	35	1,750	2	60	15	700	...	...	...	...	124	24,800	13,063	38,08,450
Wheat...	150	4,345	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	180	10,316	2,08,260
Rice...	31	960	6	108	...	...	...	...	...	...	...	...	...	...	...	...	214	4,350	645	14,222
Bajra...	53	960	...	...	...	...	...	...	19	390	...	...	5	80	...	...	103	5,180	5,017	1,38,367
Maize...	28	280	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,259	2,000	2,000	5,180
Jowar...	47	940	...	...	...	...	...	...	...	...	...	...	...	...	...	...	724	33,820	11,694	26,704
Chino, Bajri, Raha, Wana	21	325	...	...	...	...	...	...	...	...	...	...	...	...	...	...	323	3,820	1,089	2,61,699
Bajri...	8	155	...	...	...	...	...	...	...	...	...	...	...	...	...	...	323	6,640	4,378	33,485
Miscellaneous...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	140	398	35,697
Gram, Udd, Mug	220	4,390	4	2	...	...	...	...	...	...	...	...	...	...	...	...	143	2,145	5,830	1,08,159
Pur...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	15	39	596
Pulses	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peas...	692	36,120	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Groundnut	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fodder Crops.	7	105	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fodder	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lucerne, &c.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fibres	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cotton...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tag (Hemp)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dyea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drugs and Tobacco	6	180	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nicotina.	1	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oil-seeds	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mustard, Sesam	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Linseed, Castor-oil	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Condiments.	29	1,100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chilly and Onions	44	1,130	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Garlic, Turmeric and Methi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Land insufficiently irrigated	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1,359	68,012	12	276	...	...	127	3,690	96	3,240	692	10,605	85	2,993	...	...	4,237	1,44,875	79,950	58,59,742
Area on which consolidated assessment is levied	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,060	...

* The area is only 10 guntas.

* The area is only 6 guntas.

IV—E.

Comparative Statement of Irrigation and Rain-fall for the years 1892-93 and 1893-94 in the Bombay Presidency, excluding Sind.

No.	Work supplying Irrigation.	Civil Station.	Total Area in Acres.	Cultivated Area in Acres.	AREA IRRIGATED IN ACRES.						RAIN-FALL.*		REMARKS.	
					1892-93.			1893-94.			1892-93.	1893-94.		
					Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.		1892-93.		1893-94.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Inches.	Inches.	
MAJOR WORKS.														
Protective Works.														
1	Nira Canal	Poona	218,413	183,862	11,104	7,142	18,246	13,556	10,947	24,503	432.01	415.83	+ Average of 8 stations.	
2	Mhasvad Tank	Satara, Sholapur and Part Pratinidhi State.	129,045	106,214	3,561	1,486	4,997	3,907	1,376	5,283	34.11	17.30		
	Total	.....	347,458	290,076	14,665	8,578	23,243	17,463	12,323	29,786	...	...		
Productive Works.														
5	Hathmati Canal	Ahmedabad	44,744	8,000	387	2,341	2,728	1,259	2,442	3,701	44.70	50.99		
6	Lower Tapijua River Works	Khandesh	13,117	12,627	1,568	1,049	2,617	1,558	1,442	3,000	26.21	18.23		
7	Kedwa River { Waghad Tank Palkhed Canal Ojhar Tambat Canal Waddi Canal Works.	Nasik Do. Do. Do. Do.	28,822 8,055 2,433 11,260 29,913	9,837 2,367 463 98 383	463 383 98 383 46	1,496 383 93 2,435 1,823	2,959 383 153 3,038 6,634	...	1,430 364 176 267 1,625	2,104 384 385 343 8,259	26.89 29.16 23.22 32.03 43.79	28.82 23.22 18.77 26.41 24.22		
8	Pravara River Works—Lakh Canal	Ahmednagar	94,087	49,800	66	66	132	76	267	343	43.79	26.41		
9	Mutha Canals	Poona	17,152	15,320	2,435	613	3,048	2,247	642	2,889	35.34	24.22		
10	Eruk Tank	Sholapur	27,407	25,633	1,751	2,045	3,796	2,810	1,932	4,742	36.13	20.09		
11	Krishna Canal	Satara												
*	Total	.....	266,793	137,197	11,722	10,237	21,959	16,608	10,353	25,961	...	...		
	Total, Major Works	.....	614,251	427,273	26,387	14,815	45,202	33,071	22,676	55,747	...	...		

MINOR WORKS AND NAVIGATION.														
12	Khari Cut	...	...	...	17,300	11,500	778	64	842	1,760	26	1,786	51.18	48.48
13	Hartala Tank	...	...	...	584	415	98	112	99	11	107	118	46.54	29.85
14	Mhasva do.	...	...	...	4,647	2,983	11	112	123	18	211	229	38.12	19.86
15	Jamda Canal	...	...	...	46,298	30,538	737	1,514	2,271	508	1,080	1,558	34.91	19.52
16	Pargul Tank	...	...	...	2,503	97	73	265	388	69	280	359	34.91	15.34
17	Pravara River Works—O har Canal	...	...	...	23,724	14,763	405	695	1,100	352	1,891	2,243	34.54	16.77
18	Masooli Tank	...	...	...	15,126	12,124	485	842	1,337	618	965	1,613	42.02	24.39
19	Masooli do.	...	...	...	10,700	7,133	684	201	886	723	410	1,142	37.53	12.65
20	Shirurphal do.	...	...	...	597	478	31	70	101	41	83	124	34.93	14.67
21	Shirurphal do.	...	...	...	4,500	2,500	374	412	786	475	438	913	29.92	11.93
22	Bhadavadi do.	...	...	...	3,000	2,400	483	357	670	487	277	764	29.48	10.85
23	Koregaon do.	...	...	...	Not known.	2,400	483	357	502	94	253	332	46.06	18.80
24	Ashli do.	...	...	...	17,832	14,476	677	437	1,114	711	1,135	1,348	39.15	23.63
25	Revtri Canal	...	...	...	3,813	3,624	91	920	1,011	213	1,135	1,348	31.72	25.73
26	Upper Man River Works	...	...	...	8,443	7,623	561	428	1,039	942	548	1,490	29.75	17.96
27	Yeria River Irrigation Works	...	...	...	11,294	10,680	565	1,266	1,831	424	1,534	1,958	38.45	25.48
28	Gikhari Canal	...	...	...	1,871	1,478	191	78	269	291	79	370	29.49	21.24
29	Mau Tank	...	...	...	4,876	4,625	685	416	1,101	866	493	1,359	36.13	15.56
30	Mankundi Tank	...	...	...	5,570	3,417	8	...	3	10	2	12	34.21	21.56
31	Nigund do.	...	...	...	687	Not known.	...	...	...	...	...	...	...	...
32	Gadkari do.	...	...	...	...	...	...	...	...	...	...	...	...	...
33	Dambal do.	...	...	...	4,595	4,525	261	...	...	...	...	...	...	...
34	Medleri do.	...	...	...	1,916	1,062	76	...	...	...	...	...	...	...
35	Madug do.	...	...	...	2,255	1,730	359	...	...	...	...	...	...	...
36	Asundi do.	...	...	...	1,800	1,800	46	...	...	...	...	...	...	...
37	Mavinkop do.	...	...	...	687	Not known.	...	...	...	...	...	...	...	...
Total					104,688	139,961	7,704	8,733	16,437	9,215	10,751	19,066	...	...
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PROVINCIAL.														
39	Golak Canal, 1st Section	...	...	...	18,668	16,663	2,821	1,027	3,848	3,014	1,223	4,287	23.33	24.11
					...	...	...	...	...	...	...	...	...	...
					827,607	553,897	36,912	28,575	65,487	45,300	24,650	79,950	33.66	22.74
Grand Total					...	...	...	...	...	...	...	...	...	...
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STATEMENT F.

Statement showing the Operation of Irrigation Works in the Deccan and Gujarát for the year 1893-94.

No.	Names of Works.	AMOUNT DUE, 1893-94.		REMISSIONS.		TOTAL.		Grand Total.	REMARKS
		Kharif, 1893-94.	Rabi, 1893-94.	Kharif.	Rabi.	Kharif.	Rabi.		
1	2	3	4	5	6	7	8	9	10
	MAJOR WORKS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
	<i>Protective Works.</i>								
1	Nira Canal	58,254	25,449	...	...	58,254	25,449	83,703	
2	Mhasvad Tank	17,158	4,334	...	...	17,158	4,334	21,492	
	Total	75,412	29,783	...	...	75,412	29,783	1,05,195	
	<i>Productive Works.</i>								
5	Háthmati Canal	4,141	5,058	72	39	4,069	5,019	9,088	
6	Lower Pánjhra River Works	6,900	3,657	...	...	6,900	3,657	10,557	
	Waghed Tank	...	...	...	...	...	...	...	
7	Kadva River Works. { Padkhed Canal	3,690	5,555	...	...	3,690	5,555	7,245	
	{ Ojhar Tankbat	...	...	...	...	...	...	...	
	{ Wadeti Canal	924	999	...	...	924	999	1,923	
8	Pravara River Works—Lakh Canal	798	508	...	...	798	508	1,306	
	...	515	563	...	...	515	563	1,078	
9	Mutha Canals	1,34,044	4,918	...	...	1,34,044	4,918	1,38,962	
10	Ekrak Tank	12,038	2,326	...	...	12,038	2,326	14,364	
11	Krishna Canal	34,918	7,165	...	...	34,918	7,165	42,083	
	Total	1,97,968	28,749	72	39	1,97,896	28,770	2,26,666	
	Total, Major Works	2,73,380	58,532	72	39	2,73,308	58,493	3,31,801	
	MINOR WORKS AND NAVIGATION.								
12	Khári Cut	11,418	128	1,630	...	9,788	128	9,916	
13	Hartals Tank	50	216	...	...	50	216	266	
14	Mhasva do.	120	429	...	...	120	429	549	
15	Jámda Canals	4,360	2,270	...	...	4,360	2,270	6,630	
16	Parul Tank	263	1,165	...	...	263	1,165	1,418	
17	Pravara River Works—Ojhar Canal	2,022	4,008	...	...	2,022	4,008	6,030	
18	Bhatodi Tank	3,075	2,097	...	...	3,075	2,097	5,172	
19	Matoba do.	9,734	1,056	...	...	9,734	1,056	10,790	
20	Kasurdi do.	132	207	...	...	132	207	339	
21	Shirsuphal Tank	2,159	1,277	...	...	2,159	1,277	3,436	
22	Bhádálvadi do.	3,633	716	...	...	3,633	716	4,349	
23	Koregaon do.	477	530	...	...	477	530	1,007	
24	Ashti do.	2,697	1,163	...	...	2,697	1,163	3,860	
25	Revatri Canal	2,480	3,325	17	23	2,463	3,297	5,760	
26	Upper Ma. River Works	5,133	1,538	...	...	5,133	1,538	6,671	
27	Yarla River Irrigation Works	2,076	4,915	...	5	2,076	4,910	6,986	
28	Chikhli Canal	1,724	309	...	...	1,724	309	2,033	
29	Maini Tank	4,862	1,672	...	...	4,862	1,672	6,534	
30	Muchkundi Tank	54	6	...	...	54	6	60	
31	Nilgund do.	...	...	...	...	...	...	...	
32	Gadikeri do.	...	...	...	...	...	...	...	
33	Dámab do.	629	50	...	...	629	50	679	
34	Medleri do.	233	127	...	...	233	127	410	
35	Madag do.	796	1,096	...	...	796	1,096	1,892	
36	Asundi do.	175	116	...	...	175	116	291	
37	Mávin kop do.	...	...	...	...	...	...	...	
	Total	58,342	29,316	1,647	33	56,695	29,283	85,978	
	PROVINCIAL.								
39	Gokák Canal, 1st Section, and Storage Works	8,509	3,120	...	...	8,509	3,120	11,629	
	GRAND TOTAL	3,40,231	90,968	1,719	72	3,38,512	90,896	4,29,408	

* Includes water-rates on dry land and enhanced water share of consolidated revenue on Mámul Irrigation.

I—F.

Statement showing Water-rates per Acre in force during 1893-94 on Irrigation Works in the Bombay Presidency, excluding Sind.

No.	Names of Works.	WATER-RATES.					Occupier's Rate.	Owner's Rate.	Water advantage.	Remarks.
		Class I.	Class II.	Class III.	Class IV.	Class V.				
		Perennial.	Eight months.	Four months.	Monsoon dry.	Special hot weather.				
1	2	3	4	5	6	7	8	9	10	11
	MAJOR WORKS.		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
	Protective Works									
1	Nira Canal	10	4 0 0	2 0 0	0 12 0	5 0 0				
2	Mhasvad Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
	Productive Works.									
5	Hathmati Canal	10	13 0 0	2 0 0	1 0 0	6 0 0				
6	Lower Panjhra River Works ...	10	4 0 0	2 0 0	1 0 0	4 0 0				
7	Kādva River } Palkhed Canal ...	8	4 0 0	2 0 0	1 0 0	6 0 0				
	Works. } Ojhar ...									
	Canal. } Wadali Canal ...	8	4 0 0	2 0 0	1 0 0	6 0 0				
8	Pravara River Works—Lakh Canal ...	8	4 0 0	2 0 0	1 0 0	6 0 0				
	First Section, i.e., within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits.	A. 50 B. 9 C. 6	4 0 0 5 0 0 6 0 0	2 0 0 2 0 0	0 8 0 1 4 0	4 0 0 6 0 0				
	Second Section, i.e., for all villages excepting those within the above-mentioned limits within a radius of 8 miles from Poona.	A. 25 B. 18 C. 12	 5 0 0	 2 0 0	 1 4 0	 6 0 0				
	Third Section, i.e., for villages beyond those limits.	A. 13 B. 12 C. 10	 4 0 0	 2 0 0 1 8 0	 1 0 0	 6 0 0				
	For pān gardens wherever situated throughout the canal	30	.....	.....	.....	.....				
10	Ekrak Tank	10	4 0 0	2 0 0	0 12 0	6 0 0				
11	Krishna Canal	22	4 0 0	2 0 0	1 0 0	6 0 0				
	MINOR WORKS AND NAVIGATION.									
12	Khāri Cut	14	7 0 0	5 0 0	1 0 0	.....				
13	Hartala Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
14	Mhasva Tank	10	4 0 0	2 0 0	1 0 0	4 0 0				
15	Jāmda Canals	16	4 0 0	2 0 0	0 8 0	4 0 0				
16	Paraul Tank ... ..	...	.....	4 0 0	1 0 0	6 0 0				
17	Pravara River Works (Ojhar Canal)	8	4 0 0	2 0 0	0 8 0	4 0 0				
18	Bhatodi Tank	12	4 0 0	2 0 0	1 0 0	4 0 0				
	Matoba Tank	A. 18 B. 12 C. 10	 4 0 0	 2 0 0 1 8 0	 1 0 0	 6 0 0				
19	Matoba Tank	Pān gardens 30 A. 16 B. 12 C. 10	 4 0 0	 2 0 0	 0 12 0	 6 0 0				
20	Kāsuri Tank	10	4 0 0	2 0 0	0 12 0	6 0 0				
21	Shirsuphal Tank	10	4 0 0	2 0 0	0 12 0	4 0 0				
22	Bhādalvādi do.	10	4 0 0	2 0 0	0 12 0	4 0 0				
23	Koregaon do.	6	2 0 0	2 0 0	2 0 0	2 0 0				
24	Ashti do.	12	4 0 0	2 0 0	0 12 0	4 0 0				
25	Revatri Canal	18	4 0 0	2 0 0	1 0 0	6 0 0				
26	Upper Man River Works ...	18	4 0 0	2 0 0	1 0 0	6 0 0				
27	Varda River Irrigation Works ...	18	4 0 0	2 0 0	1 0 0	6 0 0				
28	Chikhti Canal	18	4 0 0	2 0 0	1 0 0	6 0 0				
29	Maini Tank	18	4 0 0	2 0 0	0 12 0	6 0 0				
30	Muchkundi Tank	8	4 0 0	2 0 0	1 0 0	4 0 0				
31	Nilgund do. ... ..	...	.....	.....	.....	.....				
32	Gadikeri do. ... ..	...	.....	.....	.....	.....				
33	Dāmbal do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
34	Medleri do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
35	Madag do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
36	Asundi do.	10	4 0 0	2 0 0	0 8 0	4 0 0				
37	Māvinkop ... ..	...	.....	.....	.....	.....				
	PROVINCIAL.									
39	Gokak Canal, 1st Section, and Storage Works	14 (a) 8	(b) 3 8 0 (c) 3 0 0 (d) 7 0 0	(e) 1 8 0 (f) 2 8 0	0 14 0	(g) 6 0 0				

Note—(1) For lift irrigation half the ordinary rates are charged.

(2) Double the ordinary rates are charged as penal rates for taking water without permission.

(3) Leakage or percolation rates are the same as ordinary rates.

Half rates are levied on irrigation from leakage water picked from nālas at the expense of the cultivators.

† Rice flooding land is charged at Re. 1.

As detailed under water-rates.

Nil.

Nil.

§ From 15th June to 15th February.
¶ " 15th October to 15th June.
a " 15th June to 15th October.
b " 15th October to 15th February.
(a) This is a special rate for sweet potatoes which require water for 10 months.
(c) & (d) From 15th June to 15th February.
(d) " 15th October to 15th June.
(e) " 15th June to 15th October.
(f) " 15th October to 15th February.
(g) " 15th February to 15th June.

STATEMENT G.

Statement showing Areas and Water-rate Assessments during 1893-94 according to the system of classification adopted in fixing the Scale of Water-rates.

Number.	Name of Work.	CLASS I.—PERMANENT.		CLASS II.—8 MONTHS.		CLASS III.—4 MONTHS.		CLASS IV.—MONSOON, DAY.		CLASS V.—SPECIAL HOT WEATHER.		MICROCLIMATE.		GRAND TOTAL.		REMARKS.
		Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	Area.	Assess-ment.	
MAJOR WORKS.																
Productive Works.																
1	Nira Canal	3,363	32,860	6,948	27,741	9,015	19,940	4,227	3,100	150	632	..	..	24,603	83,703	
2	Mhasvad Tank	472	4,695	2,739	11,271	1,866	4,961	108	50	101	412	..	43	5,233	21,492	
	Total	4,035	37,495	9,687	39,012	11,481	24,301	4,332	3,270	251	1,074	..	43	29,786	1,05,195	
	Average rate	...	9.29	..	4.08	..	2.12	..	0.75	..	4.28	..	..	..	3.43	
Productive Works.																
5	Hathmati Canal	17	170	1,145	3,438	3,999	4,645	..	..	140	837	..	..	3,701	9,088	
6	Lower Pancha River Works	168	1,607	213	1,097	707	1,533	..	..	12	49	..	..	1,238	4,308	
7	Kadva River (Palkhed Canal Works, Ojhar Tambat Canal, Wadali Canal, Prava River Works, Lach Canal, First Section, i.e., within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits, Second Section, i.e., for all villages excepting those within the above-mentioned limits within a radius of 5 miles from Poona, Third Section, i.e., for villages beyond those limits, For pan gardens wherever situated throughout the canal)	283	1,991	621	2,620	1,201	2,491	1	1	23	160	26	62	2,104	7,245	
8	Prava River Works, Lach Canal, First Section, i.e., within the Poona City and the Suburban Municipal and Cantonment limits or within one mile of these limits, Second Section, i.e., for all villages excepting those within the above-mentioned limits within a radius of 5 miles from Poona, Third Section, i.e., for villages beyond those limits, For pan gardens wherever situated throughout the canal)	51	463	193	792	299	609	1	1	6	42	8	10	538	1,922	
9	Mutha Canals, ...	18	144	201	804	154	324	5	5	1	7	6	12	385	1,306	
	Total	524	37,240	31	138	239	483	14	7	..	..	..	..	843	1,076	
	Average rate	...	7.09	..	4.30	..	2.03	..	0.50	..	0.75	..	..	..	3.43	
10	Eruk Tank	88	1,087	1,232	4,947	886	392	381	287	120	903	25	323	2,689	14,361	
11	Krishna Canal	746	7,370	2,739	10,441	322	667	1	1	153	1,233	39	79	4,742	42,053	
	Total	8,217	1,72,398	7,969	28,361	7,085	14,622	367	773	224	3,125	187	1,179	24,199	2,20,358	
	Average rate	...	20.5	..	3.55	..	2.03	..	0.89	..	7.36	..	0.30	..	9.11	
MINOR WORKS AND NAVIGATION.																
12	Khari Out	12	86	1,748	9,704	25	128	..	..	..	..	..	..	1,788	9,917	
13	Havli Tank	4	36	2	9	106	211	5	5	1	5	..	..	118	286	
14	Mhasva do.	10	86	5	2	9	106	211	5	5	1	5	..	118	286	
15	Jimda Canals	283	2,778	149	608	1,031	2,069	148	87	24	93	..	..	1,568	6,930	
16	Parsul Tank	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
17	Prava River Works (Ojhar Canal), ...	161	1,611	91	380	1,376	3,096	40	40	25	198	..	..	299	1,418	
18	Bhatodi Tank	64	767	68	2,413	940	1,906	32	22	1	9	..	..	1,613	5,173	
19	Machva do.	6	60	147	568	348	699	101	101	..	..	..	..	..	..	
20	Kasurdi do.	3	33	137	65	131	22	17	..	..	..	..	..	124	339	
21	Shirsapahad do.	157	1,534	245	962	236	470	241	180	..	..	2	8	913	3,436	
22	Bhidavadi do.	11	83	161	723	217	476	43	33	..	..	1	14	764	4,319	
23	Koregaon do.	72	434	88	173	176	370	13	27	2	2	..	..	352	1,068	
24	Ashti do.	84	1,123	319	1,266	493	1,139	278	209	19	128	..	..	1,918	8,860	
25	Beradi do.	103	1,363	707	2,936	468	963	1	1	61	560	5	11	1,343	5,505	
26	Upper Man River Works	111	2,001	790	3,155	299	593	125	98	163	1,221	2	3	1,490	7,071	
27	Yerla River Irrigation Works	44	790	1,165	4,651	710	1,433	30	31	9	86	..	..	1,953	19,901	
28	Chitkoti Canal	301	2,910	1,167	5,167	81	62	3	13	149	9	..	..	370	2,033	
29	Maini Tank	104	1,870	512	8,232	324	699	30	23	76	694	3	5	1,359	6,584	
30	Muchkundi do.	4	30	7	27	1	2	..	..	..	..	..	..	12	60	
31	Nilgund do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
32	Gadikeri do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
33	Dambal do.	39	389	57	245	9	19	..	..	..	..	22	26	127	679	
34	Mederi do.	27	209	10	50	54	10	2	5	1	4	2	1	96	410	
35	Madi do.	15	165	98	560	669	1,717	2	1	..	..	..	..	692	1,802	
36	Asundi do.	1	12	32	156	52	123	..	..	..	..	..	..	85	291	
37	Mavinip do.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	Total	2,239	30,173	7,659	33,165	8,537	18,459	1,179	623	401	3,149	51	167	19,867	86,030	
	Average rate	...	13.5	..	4.39	..	2.16	..	0.79	..	7.95	..	3.27	..	4.31	
PROVINCIAL.																
39	Golkak Canal, 1st Section, and Storage Works	170	2,373	939	3,233	2,030	4,218	860	753	43	259	195	794	4,237	11,629	
	Grand Total	14,721	3,42,438	25,544	1,03,760	29,138	61,500	7,239	6,794	1,119	7,007	433	2,189	778,199	1,623,212	
	Average rate	...	10.5	..	4.06	..	2.11	..	0.79	..	0.79	..	0.04	..	5.41	
Exclusive of 1,762 Acres of Municipal Bagayat area and Rs. 6,248 enhanced water rates on old works on the Lower Panchra																

Notes.—The difference between the figures of total areas and assessments in this statement and those in Statements I-E to IV-E is due to difference in treatment of fractions in some cases, and in others to the fact that the figures in this statement are more or less hypothetical and are arrived at on the assumption that certain areas are assessed at certain rates.

STATEMENT H.
Statement showing Operations of the year 1893-94.

No.	Names of Works.	CAPITAL OUTLAY, DIRECT AND INDIRECT.		LENGTH OF (at expiration).		AREA UNDER COMMAND.		Dis. chert at head, foot per second.	AREA.		Reclamation.	Working Expenses.	Net Revenue.	REMARKS.
		During 1893-94.	To end of 1893-94.	Canal.	M. Ft.	M. Ft.	Distrib. tactics.	Gross.	Irrigable as present.	Acres.	Acres.	Ra.	Ra.	
1	Mina Canal.	Rs. 118,133	Rs. 55,585	0	132	2,447	138,862	219,413	138,862	15,933	25.36	77,590	82,947	* Includes Interest charges.
2	Musavet Tank.	7,101	20,422	27	3,880	684	199,045	106,314	106,314	17,300	95.46	23,490	22,060	
	Total	1,26,234	75,007	123	3,899	196	5,097	347,453	200,076	33,233	120.78	1,01,011	104,007	
3	Hathmudi Canal.	Rs. 613,395	Rs. 613,395	21	30	44,744	6,000	44,744	6,000	19,006	60.46	18,595	9,679	
4	Lower Pajirra River Works.	1,385	4,453,332	...	...	13,117	12,627	13,117	12,627	1,082	10.45	12,597	12,597	
5	Kadva River Works.	1,385	4,453,332	...	...	13,117	12,627	13,117	12,627	1,082	10.45	12,597	12,597	
6	Other Tumbal Canal.	...	...	...	...	...	...	...	...	...	...	...	...	
7	Parva River Works.	...	...	...	...	...	...	...	...	...	...	...	...	
8	Kutva Canal.	...	...	...	...	...	...	...	...	...	...	...	...	
9	Kutva Canal.	...	...	...	...	...	...	...	...	...	...	...	...	
10	Bekra Canal.	...	...	...	...	...	...	...	...	...	...	...	...	
11	Arabian Canal.	...	...	...	...	...	...	...	...	...	...	...	...	
	Total	1,74,49,721	1,07,41,043	269	2,274	170	4,984	240,738	137,173	45,303	25.01	3,55,426	2,10,618	
	Total Major Works.	2,97,269	1,51,47,250	389	1,853	369	4,401	614,251	437,297	55,747	33.03	4,51,089	2,89,087	
12	Kutva Canal.	Rs. 1,51,386	Rs. 1,51,386	...	...	...	...	...	...	...	...	...	...	
13	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
14	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
15	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
16	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
17	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
18	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
19	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
20	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
21	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
22	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
23	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
24	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
25	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
26	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
27	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
28	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
29	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
30	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
31	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
32	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
33	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
34	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
35	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
36	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
37	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
38	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
39	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
40	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
41	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
42	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
43	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
44	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
45	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
46	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
47	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
48	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
49	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
50	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
51	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
52	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
53	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
54	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
55	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
56	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
57	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
58	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
59	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
60	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
61	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
62	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
63	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
64	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
65	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
66	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
67	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
68	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
69	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
70	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
71	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
72	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
73	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
74	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
75	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
76	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
77	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
78	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
79	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
80	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
81	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
82	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
83	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
84	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
85	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
86	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
87	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
88	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
89	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
90	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
91	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
92	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
93	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
94	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
95	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
96	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
97	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
98	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
99	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	
100	Musavet Tank.	...	...	...	...	...	...	...	...	...	...	...	...	

* Areas on which consolidated assessment is levied.
 † See foot note to Statement II-A.

Approximate figures.

Includes 1893-94 at Musavet.

PART I.

MAJOR WORKS.

PROTECTIVE IRRIGATION WORKS.

(1).—NIRA CANAL.

At the close of the previous year the irrigable area under command of the canal was 171,868 acres, and the first 15 miles of the large distributary No. 59 had been opened; during the year under review the remaining length of the distributary No. 59, viz. 8 miles and 1,986 feet, was brought into operation, adding 11,994 acres to the command, making a total of 183,862 acres.

2. The total area irrigated during the year was 24,503. The following table gives the result of the previous five years and of the present year:—

Years.	Kharif.	Rabi.	Total.	Water-rates assessed.
	Acres.	Acres.	Acres.	Rs.
1888-89	4,209	14,350	18,559	20,671
1889-90	9,819	12,111	21,930	24,688
1890-91	8,920	7,993	16,913	36,226
1891-92	9,595	19,268	28,863	66,390
1892-93	11,104	7,142	18,246	60,036
1893-94	13,556	10,947	24,503	83,703

3. The total area irrigated was 6,257 acres more than in 1892-93 and 4,360 acres less than in 1891-92, the maximum hitherto obtained.

The kharif season showed an increase of 2,452 acres, principally due to the extension of irrigation in the villages beyond Baramati and particularly under distributary No. 59; and in the rabi season the increase, viz. 3,805, is due to the rain having fallen in September and early part in October and very little in November and none in December 1893. The increase in kharif season is principally due to sugar-cane 1,797 acres and ground-nut 2,150, bajri 256 only. There was a large decrease, viz. 1,992, in fodder crops, which was due to the good harvest of jowari last year. The increase in rabi is principally in jowar, 4,206 acres.

4. The excess of the measured area over that applied for, as shown in the following table, was 5,761 acres; the reason for the difference is, as stated before, viz., that the cultivators put down in the applications the minimum area on which they can be charged and generally irrigate more:—

Seasons and years.	Applied for.	Irrigated.	Difference.	Percentage of difference on area applied for.
	Acres.	Acres.	Acres.	
<i>Kharif.</i>				
1892-93	9,921	11,104	1,183	.....
1893-94	11,629	13,556	1,927	.....
<i>Rabi.</i>				
1892-93	5,260	7,142	1,882	.....
1893-94	7,113	10,947	3,834	.....
Total ... { 1892-93	15,181	18,246	3,065	20.19
{ 1893-94	18,742	24,503	5,761	30.74

5. The rain-fall of the year was considerably less than last year and compares with the last two years as follows:—

Years.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Inches.
391-92	9.08	4.77	13.85
392-93	21.34	10.67	32.01
393-94	10.20	5.63	15.83

The following table shows the total rain-fall of the kharif and rabi seasons at the different stations along the canal:—

Stations.	1893-94.			Average for 10 years from 1883 to 1892.	Average for 5 years from 1889 to 1893 inclusive.
	Kharif.	Rabi.	Total.		
	In. c.	In. c.	In. c.	In. c.	In. c.
Pimpri	10 62	4 25	14 87	20 93	20 46
Wadgaon	9 75	4 94	14 69	21 92	20 62
Pandhara	11 01	6 12	17 13	20 75	20 60
Baramati	10 36	7 10	17 46	20 92	21 16
Sansar	9 13	5 89	15 02	21 72	22 75
Haturna	12 80	5 35	18 15	22 10	23 01
Nimbgaon	8 89	4 45	13 34	20 44	19 86
Barda	9 61	6 94	15 95	18 73	17 34
Total	81 57	45 04	128 61	...	...
Average	10 20	5 63	15 83	...	...
Total as per Statement IV.—E.	...	...	15 83	...	...
Virwadi	11 72	8 06	19 78	20 62	21 35
Indapur	11 67	4 49	16 16	24 03	21 37

6. The first flood in the Nira river occurred on the 18th June 1893 and water rose to a height of 5.20 feet above the crest of the main weir on 20th June. This was the highest flood of the year. Two more floods occurred during the year, one on 7th July and the other on 5th August 1893 and water rose to the heights of 2.80 and 4.30 feet respectively above the weir crest. Water stopped flowing over the weir on 15th October 1893; from this date the supply in the river diminished, and as there was no late rain it was necessary to supplement the natural river discharge by drawing off from the storage at Bhatghar from 3rd November 1893, when the volume impounded in the reservoir was about 3,808 million cubic feet.

7. The monthly average discharge in the canal at head is given below. The first column shows the average struck on the number of days the canal was actually open and the figures correspond with those reported in the monthly statements of irrigation, while the second column gives the true average discharge for the months found by dividing the volume by the full number of days in the month:—

* 9 years' average. + 6 years' averag. † 1 year's average. § 8 years' average. || 2 years' average.

Month.	Average actual discharge taken on number of days open.	Mean discharge taken on full number of days in month.
1893.		
April	172	172
May	166	136
June	138	101
July	272	272
August	414	414
September	449	449
October	270	194
November	348	348
December	317	296
1894.		
January	211	153
February	119	102
March	184	148
Total	3,060	2,785
Monthly average	255	232

8. The working expenses, including direct and indirect charges, amounted to Rs. 62,047. With 96 miles of main canal in operation this gives a rate of Rs. 646.32 per mile, and it includes the maintenance of 132 miles of distributaries. The expenditure per acre irrigated was less than last year; the rate was Rs. 2.53 against Rs. 3.22 and Rs. 1.49 of the previous two years, respectively.

The working expenses include a sum of Rs. 2,790 on special repairs, which consisted of strengthening the banks by puddled earth cores, where they were found to be unsafe or leaky, due to the nature of the soil of which they were made.

The heavy charges for tools and plant are due to the purchase of a pulso-meter and portable boiler (Rs. 4,541) required for clearing the superpassages of silt.

9. The gross revenue from all sources amounted to Rs. 85,121, consisting of Rs. 83,703 for water rates assessed on the total irrigated area of 24,503 and Rs. 1,418 from other sources. The rate of assessment thus works out at Rs. 3.42 per acre against Rs. 3.29 of the previous year. The net revenue was Rs. 85,121—Rs. 62,047 = Rs. 23,074.

10. The expenditure on plantation was Rs. 1,216 and receipts Rs. 670. The trees were not counted during the year.

11. The cost of measuring the irrigated area was Rs. 2,080, which is 1 anna and 4 pies per acre against 1 anna and 10 pies of last year. The reason for this comparatively high rate is the increase in the area of the high rated perennial and 8 months' crops which require more careful measurements than the 4 months' crops.

12. In Statement I.—E, the duty of water is shown to be 65 acres for kharif and 39 acres for rabi. These figures are of no value because in the case of kharif the canal was run full during the rains in order to test all the banks, and the discharge was very much in excess of that required for irrigation. In the case of rabi, the area of perennial and 8 months' crops is omitted from the area on which the duty is calculated. Taking these figures into account, the more correct duty for the rabi season was 75 acres per cubic foot per second.

The following statement shows the duty of water on some of the most important distributaries :—

Number of distributaries.	Volume of water passed from 18th October 1893 to 28th February 1894, 136 days.	Area irrigated.	Duty in Acres per cubic foot per second running for 136 days.	DETAIL OF CROPS.				Number of days open.
				Perennial.	Eight month.	Rabi.	Total.	
	Cubic feet.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
Distributary No. 8...	23,951,404	298	146	161	36	101	298	63
" " 13...	19,126,967	257	156	50	10	197	257	71
" " 22...	65,936,058	1,009	180	291	104	614	1,009	105
" " 23...	13,219,920	301	266	39	130	132	301	75
" " 36...	100,594,432	1,661	176	128	444	1,089	1,661	96
" " 57...	93,239,000	1,020	128	74	454	495	1,020	104

13. The following is the result of an experiment to determine the exact quantity of water used on a crop of *khapla* wheat.
Crop experiments. The water was gauged by means of a thin plate notch fixed on the edge of the field :—

Area irrigated.	Number of waterings.	Total quantity of water used.	Average quantity of each watering.	Depth of water over whole field for each watering.	Depth over field for whole period of irrigation.
Acres.		C. ft.	C. ft.	Inches.	Inches.
1.15	*10	97,991	9,799	2.34	23.4

14. The total area under command was 183,862 acres, and of this 7.37 per cent. was irrigated during the kharif and 5.95 per cent. during the rabi season.

15. The following table shows the area irrigated in the year from some of the principal distributaries and percentage of irrigation on the net irrigable area commanded :—

Number of Distributary.	Mileage of Ma'n Canal.	AREA IRRIGATED.		Irrigable area under command.	PERCENTAGE OF IRRIGATION TO LAND UNDER COMMAND.	
		Kharif.	Rabi.		Kharif.	Rabi.
		Acres.	Acres.	Acres.		
6	18th mile ...	374	302	3,369	11.10	8.96
8	22nd " ...	267	100	2,400	11.12	4.16
18	34th " ...	482	961	9,703	4.97	9.90
19	34th " ...	213	375	641	33.22	58.50
24	42nd " ...	708	785	14,618	4.81	5.37
28	49th " ...	221	132	583	37.90	22.64
36	64th " ...	966	1,092	9,694	9.96	11.27
46	75th " ...	657	377	9,835	6.68	2.81
57	90th " ...	828	506	15,931	5.19	3.17
59	95th " ...	1,810	1,004	47,971	3.77	2.09

16. The most noticeable feature of the year was the large increase in the area of sugarcane irrigation which rose from 1,639 acres last year to 3,436 acres, an increase of 1,797 acres.

* Date of first watering, 11th November 1893.
Date of last watering, 5th February 1894.

In a short time the area of this crop will have to be limited, so that the required supply may always be available in the rabi season for dry-crops in the event of a failure of rain. This question is being considered in connection with proposal to increase the water-rates. The area of ground-nut was very large this year, viz. 5,811 acres. Unfortunately, when the crop was ripe and ready to be dug up, viz. in February, heavy rain fell, and owing to great scarcity of labour, the crop could not be removed before the nut began to shoot, and the result was that the greater part of the crop was completely lost. This will probably cause a decrease in the area next year owing to want of seed, and to the people not wishing to run the risk of another such failure. One of the greatest difficulties that always has to be met is the scarcity of labour to remove the crop which, the people try to do at the time when the jowári is cut. Ground-nut can, however, be left in the ground after it is fully matured, provided the ground is kept quite dry, the nut is much improved, and the digging can be done when labour is available. There is however the risk of rain falling, as it did this year, in February. Leakage from the canal has made the nála crossings on the road between the Nira Station, Southern Marátha Railway, and Baramati extremely difficult for carts, and it is proposed to construct crossings at the worst places, as a charge against the canal. This road however will prove a serious impediment to the export of canal produce until it is made throughout a pukka metalled road.

(2).—MHASVAD TANK.

The rainfall for the year under report was 17.30 inches (kharif 11.28 and rabi 6.02) against 34.11 inches of the previous year, (kharif 22.17 and rabi 11.94), and was seasonable.

• Rainfall.

The waste weir wall being cut on account of leakage in the dam, the early rain water soon passed over it. The replenishment up to the cut level—1,931.64—was as under. The lowest R. L. of the tank water was 1,927.50 :—

May 1893.	...	...	...	4.15
June "	...	...	...	2.00
July "	...	...	...	3.50
Total feet				9.65

The waste weir began to overflow on the 24th July 1893. The average total rainfall gauged at 5 stations on the catchment area of 480 square miles up to 24th July 1893 is 10.36 inches. The supply in the tank at R. L. 1,931.64 or 15.94 feet above the sill of the canal sluice would be sufficient for about 5,000 acres to 31st March 1894 without further rainfall.

2. The area irrigated during the year was 5,283 acres, of which 3,907 were kharif and 1,376 were rabi, against 4,997 acres of the previous year (kharif 3,561 and rabi 1,436). The area applied for was 4,536 acres (kharif 3,385 and rabi 1,151) or 747 acres less. The cause is that the cultivators have taken water for a greater area than applied for. It will be seen from the above figures (actual and applied for) that the cultivators have irrigated 16.47 per cent. more than the applications, the reason being that they are ignorant of the areas of their fields.

3. There has been no free grant of water nor increase in rates. The assessment on account of water-rates amounted to Rs. 21,492 against Rs. 19,997 of the previous year. The gross revenue from all sources being Rs. 22,490 against Rs. 20,613 of the previous year.

4. The following statement gives a comparison with previous years since the opening of the canals :—

B 1195—2

Years.	Kharif.	Rabi.	Total.	Water-rate Assessment.	Gross Revenue.	Working Expenses.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
1886-87	617	727	1,344	1,030	1,825	11,812
1887-88	1,717	2,144	3,861	5,897	6,883	15,618
1888-89	2,965	3,139	6,104	12,733	12,875	13,269
1889-90	4,074	2,718	6,792	14,969	16,327	12,285
1890-91	4,081	3,025	7,106	13,541	14,241	12,729
1891-92	3,544	4,760	8,304	25,457	26,104	12,633
1892-93	3,561	1,436	4,997	19,997	20,613	15,121
1893-94	3,907	1,376	5,283	21,492	22,490	22,060

5. There was an increase of 346 acres in kharif over the previous year and decrease of 60 acres in the rabi. The rainfall for the rabi crops for this and the previous year was seasonable; hence the decrease in the rabi area. The land under command is generally inferior, on which only kharif crop can be profitably raised, and this accounts for the increase in the kharif crop of the year. The incidence of water-rate per acre was 4·07 against 4·00 of the previous year.

6. The rainfall over 480 square miles catchment area was gauged at 5 places; the average rainfall from 1st June to 31st October 1893 was 16·26 inches, which gave 18,132 millions of cubic feet of water on this area. The run-off is calculated to be 0·079 from 1st June to 24th July 1893, on which date waste weir began to flow; the run-off from 1st June to 31st October 1893 being 0·131.

7. For evaporation and absorption special experiments were made, the result of which is given below. The usual calculations cannot be made, because the water was run off through the sluices to allow of the strengthening of the dam to be taken in hand.

The canal was closed for 3 days. There was then no water flowing from the tank; during this time the actual loss was $\frac{7}{8}$ of an inch, the area of the tank was then 89,456,208 square feet. This is equivalent to a discharge of 25 feet per second.

During the time the experiment was being made, the weather was unfortunately cloudy and stormy, and 3 cents of rain fell; this would to a considerable extent prevent evaporation. And the total fall in the tank may under ordinary circumstances be taken at 1 inch or 7,500,000 cubic feet for the three days. This gives a loss of nearly 30 cubic feet per second.

8. The working expenses, including direct and indirect charges, amounted to Rs. 22,060; the item "Maintenance and Repairs" amounted to Rs. 8,348, of which Rs. 791 were on account of special repairs to the dam. The length of the canals, branches and distributaries is 94 miles; this represents Rs. 80 per mile. The increase in working expenses as compared with the previous year is due to an Assistant Engineer and a Sub-Engineer being placed in charge of the special repairs to the dam.

9. The area irrigated was measured at a cost of Rs. 1,292, or annas 3 and pies 10 per acre, against annas 4 and pies 6 of the previous year. This rate will be further reduced next year.

10. Special experiments to determine the duty of water were made, and the result was as under :—

Duty of water.

Number of Plot.	Name of Crop.	Quantity of Water for one Acre in Cubic feet.
1	Sugarcane... ..	357,061.45
2	Do.	872,163.93
3	Do.	370,558.07
4	Ground-nut	49,278.55
5	Maize	37,747.69
6	Jowari	23,703.48
7	Wheat, Jod	63,874.11

11. At the end of the year the number of trees above and below 5 feet on this work was 15,028 :—

			Above 5 ft.	Below 5 ft.
Babul	...	...	3,825	3,556
Nimb	...	...	1,719	1,655
Mango	...	...	392	360
Tamarind	...	...	25	27
Chandan	...	...	1	5
Nimboni	...	...	9	15
Bori	...	...	435	430
Guava	...	...	7	7
Miscellaneous	...	...	1,671	889
			8,084	6,944
		Total ...	15,028	

and the expenditure thereon Rs. 314.

12. Leaks appeared suddenly in the rear of the dam on the 20th January 1893 between chainages 7,713 and 7,739 at R. L. 901, and others followed. The discharge from these leaks

General remarks. was $\frac{1}{2}$ cubic foot per hour; the discharge was not great, but on cutting into the dam it was found to be in a most unsatisfactory state; a walking stick could be pushed into the dam some 3 or 4 feet with ease, and on its being withdrawn there was a little rush of water; showing that the interior of the dam was saturated; there was fear of a collapse, and immediate steps were taken to prevent this as far as possible by reducing the water in the tank and removing the top portion of the dam.

After investigation, proposals were made to strengthen the dam by removing the affected portion, putting in drains to prevent water again lodging in the heart of the dam, and re-making the dam.

The following progress was made to the end of March :—

123,431 cubic feet removing bank	Rs. 725
1,100 „ filling in drains with rubble	66

The work was pushed on vigorously to enable the work to reach a safe height before the rains set in, and by the end of July 1894 the work will reach R. L. 942 or 10.36 feet above the cut in the waste weir channel, where it is proposed to stop till next cold weather to allow the new work to settle before completing the top portion of the dam.

During the excavation a large amount of karal soil was met with, though it was not distinguishable when first opened out; this earth only showed, after it had been exposed for some time, by retaining its moisture after other parts had dried; but this, though it eventually disintegrated, and the surface fell off in powder, was not responsible for the leaks; but a slimy silt largely composed of fine sand, termed “copala” by the work-people, was found as the cause; this, when the bank was opened out, showed quite black though much the same colour as the rest of the dam when dry.

The whole of this portion of the dam was luckily not composed of this silt; but it was in layers and streaks with the good material.

All the bad material removed was thrown at the toe of the dam to form a berm, dry stone drains being run through it to prevent water collecting in it as formerly.

The total cost of this work to the end of June was Rs. 9,329.

PRODUCTIVE PUBLIC WORKS.

(5).—HÁTHMATI CANAL.

The rain-fall for the year under review was 48·94 inches in the kharif and 2·05 inches in the rabi season against 44·60 inches and 0·10 inches respectively during the previous year, the average of the last five years being as follows :—

				In.	cts.
Kharif ...	...	...	...	26	01
Rabi ...	...	...	...	0	63

2. The areas irrigated during the last year and the year under report were as follows :—

		Kharif.	Rabi.	Total.
		Acres.	Acres.	Acres.
1892-93	...	387	2,341	2,728
1893-94	...	1,259	2,442	3,701

Assessments.

3. The assessments were as follows :—

		Kharif.	Rabi.	Total.
		Rs.	Rs.	Rs.
1892-93	...	1,126	4,698	5,824
1893-94	...	4,069	5,019	9,088

4. The following table is instructive as regards the effect of rain-fall on the area of land irrigated ; but, that rain-fall alone is not the ruling factor, is also evident ; thus from 1888-89 to 1892-93, a small *kharif* rain-fall induced a large *kharif* irrigated area and *vice versa*. At the same time there seems to have been another factor at work, causing a steady increase during that period ; for in 1890-91, though the kharif fall was greater than in 1888-89, the area was also greater ; and again in 1891-92 there was an increase over 1890-91, though the fall was practically the same. This tends to show that a steady annual increase in area irrigated up to some unknown limit, may be hoped for. The superabundance of rain in 1892-93, if considered alone, would tend to upset the soundness of this deduction ; but that in 1893-94, after a still greater rain-fall, the area irrigated was the same as that in 1890-91 and closely approximated to that of 1891-92, both years of scanty fall. In this there is most decided promise : and it may be assumed with considerable confidence that the cultivators, having found in 1892-93 that their crops did not do well without regular canal irrigation, for that reason took to it again in 1893-94, though the rain-fall in that year was 10 per cent. heavier than the year before. It will be of interest to verify this assumption by future observation. The above remarks refer only to *kharif* crops. The *rabi* acreage does not seem to have been materially, if at all, affected by rabi rain-fall ; it depends on the supply of water available from the river, which is again dependent for its supply on the monsoon ; this supply was insufficient in 1891-92, as reported in paragraph 4, page 7, of the Revenue Report of that year, and, with the exception of that year, the canal has done well during rabi seasons, *i. e.*, the remarkable increase of area, from 1,441 acres to 2,500 acres in 1890-91, was maintained well in 1892-93 and 1893-94, the figures having been 2,341 acres and 2,442 acres respectively :—

Years.	RAINFALL.		AREA.			ASSESSMENTS.		
	Kharif.	Rabi.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
1888-89	13·00	2·17	1,010	1,457	2,467	3,200	2,018	5,218
1889-90	27·89	0·17	909	1,441	2,350	2,809	2,854	5,663
1890-91	22·11	0·56	1,266	2,500	3,766	3,727	4,947	8,674
1891-92	22·46	0·22	1,367	1,349	2,716	4,074	2,641	6,715
1892-93	44·60	0·10	387	2,341	2,728	1,126	4,698	5,824
1893-94	48·94	2·05	1,259	2,442	3,701	4,069	5,019	9,088

5. Remissions to the extent of Rs. 111 were granted, of which Rs. 63 were free grants.

6. The areas applied for and irrigated were as under:—

		Kharif.	Rabi.
Applied for ...	...	944	1,718
Irrigated ...	...	1,259	2,442

The difference is due to the inability of cultivators to estimate correctly what area they will irrigate and perhaps also to carelessness, as well as to the fact that lands within 200 yards of the canal and benefited by percolation are assessed, no applications for water being, from the nature of the case, necessary for them.

7. The miscellaneous revenue realized during the year amounted to Rs. 1,169 and Rs. 1,146 during the previous year.

8. The areas irrigated were measured by the ordinary establishment employed on the canal (charged to revenue establishment) at a total cost of Rs. 134, or 7 pies per acre irrigated against 9 pies per acre during the previous year.

9. The average water-rate per acre irrigated during the year was Rs. 2.46 as compared with Rs. 2.13 during the previous year. The increase is due to irrigated kharif areas being in excess of those during the previous year.

10. The working expenses of the year as compared with those of the previous year were as follows:—

Year.	Extensions and Improvements.	Maintenance and Repairs.	Establishment, including Indirect Charges.	Tools and Plant.	Total.
		Rs.	Rs.	Rs.	Rs.
1892-93 ...	...	4,044	1,508	12	5,559
1893-94 ...	...	4,269	1,743	13	6,025

The rate per acre irrigated was Rs. 1.63 for the year under report against Rs. 2.04 during the previous year, a decrease of nearly 41 per cent. The amount spent on silt clearance was Rs. 562 or Rs. 11 per mile on a length of canal and distributaries, of 51 miles.

11. No reliable data can be given regarding the duty of water. The canal has been gauged for a series of years and the result shows that about 50 per cent. of the water is lost by absorption and evaporation in the first 10 miles where there is practically no irrigation; thus the average discharge gauged at the head during the last kharif season was 70 cubic feet per second. Out of this only 35 cubic feet per second reach the 1st distributary take off, so that the duty during the kharif season is about 36 acres per cubic foot of discharge against 12 acres of the previous year; the increase is due to the larger supply available in the canal, the leakage being in proportion inversely as the canal discharge. In the rabi season the average discharge at the head for the year was 75 cubic feet per second, the area irrigated being 2,442 acres. Allowing the same percentage for loss by absorption, the result is about 65 acres per cubic foot as against 53.20 acres for the previous year.

(6).—LOWER PÁNJHRA RIVER WORKS.

1. These works have been in operation now for 22 years.

2. The irrigation under these works is served from the Pánjhra River supply, which is supplemented by the Mukti Tank storage, when needed, to meet the wants of irrigation. During the year under report the tank was drawn upon for 25 days. In the hot season, at the beginning of the year, the river discharge fell a good deal. The tank sluices had therefore to be kept open from 28th April to 17th May 1893, giving out a discharge varying from

7.25 cubic feet to 13.27 cubic feet per second. After 17th May there was a replenishment in the natural river flow, which made it unnecessary to let out any more tank water. The second draw off from the tank during the year was for 5 days in the rabi season, from 13th to 17th November, both days inclusive. A discharge of 15.69 cubic feet per second was then let out to meet the requirements of irrigation under the tail channels of the Lower Pánjhra system.

3. The available storage in the Mukti Tank at the commencement of the year was 280.79 millions cubic feet, which after serving the demands of perennial and hot weather irrigation, both in káyam bágáyat and in jiráyat lands, went down to 219.15 millions cubic feet before the tank had its first replenishment on 13th June 1893. The contents gradually increased after that date, until they reached 303.57 millions cubic feet on 2nd September. These were the highest contents in the tank during the year, against the full capacity of 342.40 millions cubic feet. The deficiency, however, did not impair the efficiency of the tank. The storage was more than sufficient to meet all irrigation requirements. The tank storage at the close of the year was 228.36 millions cubic feet.

4. The irrigation during the year is tabulated below by seasons, and in comparison with that of the previous year, both in mámul bágáyat and in jiráyat land :—

	Kharif.		Rabi.		Total.	
	1892.	1893.	1892.	1893.	1892.	1893.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mámul	1,270	1,087	445	675	1,715	1,762
Jiráyat	298	471	604	767	902	1,238
Total	1,568	1,558	1,049	1,442	2,617	3,000

The mámul bágáyat is fixed under the settlement. The increase in it is due to the reclassification of "thal" land according to the revision survey in the village of Betávad in Sindkheda Táluka. The increase in the jiráyat land is due to the revival of irrigation at Mohadi, a village in Dhulia Táluka, which had for some time given up irrigation, and to the larger cultivation of perennial crops such as sugarcane and plantain. There was a large cultivation of ground-nut also during the year, which required canal water.

5. The rain-fall during the year was 18.48 inches against 26.56 inches of the previous year and 23.04 inches, the average of the past 20 years.

The year's fall by seasons with corresponding fall of previous year may be tabulated thus :—

Years.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Inches.
1892-93	24.74	0.47	25.21
1893-94	14.68	3.55	18.23

There was a decrease of 28 per cent. in the year's rain-fall. The deficient monsoon fall led to increase in the irrigation of monsoon dry-crops. Though rabi rain-fall was much greater than that of the previous year, it was late in the season and considerable wheat and pea areas had therefore to use canal water.

6. The irrigation in jiráyat lands is compared in the following table with the irrigation of previous year, classified according to the water-rates levied :—

	Kharif.		Rabi.	
	1892.	1893.	1892.	1893.
	Acres.	Acres.	Acres.	Acres.
1. Perennial ...	122	163	1	...
2. Eight months ...	140	273	1	...
3. Four do. ...	...	...	602	767
4. Monsoon ...	15	23	...	...
5. Hot weather ...	21	12	...	...
Total ...	298	471	604	767

The increase in irrigation is, as has been already explained, due to (a) revival of Mohadi irrigation, and (b) smaller and untimely rain-fall during the year.

7. The káyam bágáyat under the 4 channels of Dhulia, Nimkhedi, Japi and Nahalod was assessed under the survey settlement of 1868-69 at a consolidated rate for land and water plus the enhancement of water-rates for the assured water-supply from the Mukti Tank. In Amalner and Sindkheda Tálukas under Mudhi, Mandal and Betávad channels, the assessment was under the revision survey settlement. In Sindkheda Táluka water-rates directly creditable to the Irrigation Department have been fixed, whereas the water share of revenue from Mudhi and Mandal channels in Amalner Táluka is credited in the shape of indirect revenue.

8. The Inámdár of Kaothal still continues to object to pay for the benefit derived from the Mukti Tank. A method of restricting the supply of water in his channel to that due to the natural flow of the Pánjhra River, has been suggested, but the Inámdár is unwilling either to accept this or to pay for the Mukti Tank supply. The question as to how his case should be dealt with is still under consideration.

9. Revision survey settlement was introduced during the year at Betávad in Sindkheda Táluka. The channel of this village is the last of the Lower Pánjhra series. The settlement officers have increased the Káyam "Pátasthal" area of the village by 22 acres, as compared with the old settlement. This result emphasizes what is looked upon as a mistake in the revision survey operations in Mudhi and Mandal villages in Amalner Táluka, which have a better water-supply than Betávad. In Mudhi and Mandal a considerable degradation of bágáyat land has taken place, and that again without the consent of the holders of the degraded lands. A good deal of the degraded land is watered by the holders, and has to be assessed under the crop rates. The disposal of this question is still pending on a report due from the Survey Department.

10. The assessments of the year amounted to Rs. 17,847 as under:—

	Rs.
A. Water-rates from old irrigation—	
1. Enhanced water-rates ...	3,691
2. Direct water-rates credited to the Irrigation Department according to revision survey ...	2,557
3. Irrigation share of land revenue under the settlement ...	6,788
Total ...	13,036

against Rs. 12,539 of previous year:—

	Rs.
B. New or dry-crop irrigation—	
4. Water-rates ...	4,309
5. Miscellaneous ...	502
Total ...	4,811

against Rs. 3,698 of previous year. : total of A and B Rs. 17,847 against Rs. 16,237 of previous year. The increase in the assessment of old irrigation is due to revision survey, which converted additional land into *bágayat* in the village of Betávad, and the increase in the new irrigation revenue is due to the larger areas irrigated in the kharif and rabi seasons.

11. The average rate per acre paid is :—

			Rs.	a.	p.
Old irrigation	...	...	7	6	5
New irrigation	...	...	3	7	8

12. There were no remissions during the year.

13. The realizations amounted to :—

	Rs.
1. Enhanced water-rates	3,691
2. Direct water-rates from old irrigation	2,557
3. Irrigation share of land revenue	6,788
4. Water-rates on new land	3,712
5. Miscellaneous	502
	<u>17,250</u>

14. Outstandings at the end of the year amounted to Rs. 465, which were all from the demands of water-rates on new or dry-crop land irrigated.

15. The following table contains a comparison of the areas for which applications for water were received and the areas actually assessed :—

	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
Applied for	436	646	1,082
Assessed	471	767	1,238
Difference	35	121	156

The cause of the excess in actual irrigation, as compared with the water applications, has already been explained in the previous year's report. The *jirayat* portions of *bágayat* lands in Mudhi and Mandal are being watered without water applications. They do not find place in the irrigation operation statements. Such areas are, however, measured and assessed by the Irrigation Department at the end of each season.

16. The cost of measurements of irrigated crops during the year was Rs. 55-6-8, and the rate per acre is 9 pies only, same as last year.

17. In the following table the year's working expenses are contrasted with those of the previous year :—

	1892.	1893.
Works... { Extensions and Improvements	31	162
Repairs	4,106	1,458
Establishment { Direction	937	327
Executive	2,518	1,202
Tools and Plant	83	100
Leave and Pension allowances	484	214
Collection charges	1,408	1,489
Total	9,567	4,952

The expenses during the year have been a little more than half of the previous year. Deducting these and the refund of revenue Re. 1 from the year's assessments, the net revenue is Rs. 12,894, which represents a return of 2.94 per cent, on the direct capital outlay to the end of the year, which was Rs. 4,38,538.

18. Special experiments were made during the year to find out the duty of water in the rabi season. A record was kept of the water actually given to wheat and pea crops in Survey Nos. 20 and 165 respectively, in the village of Nahálod. The results are given below :—

Village.	Survey Number.	Crops irrigated.	Area irrigated.	Number of Waterings given.	Total quantity of Water given.	Total quantity of Water used per Acre.	Duty of Water in Acres per Cubic foot per second of discharge running during the Rabi Season of 4 months (123 days).	Remarks.
			A. g.		C. ft.	C. ft.		
Nahálod ...	20	Pea ...	0 35	2	22,958	26,238	405	
	165 P. 2	Wheat	0 16	3	8,010	20,025	537	

19. The following figures represent the calculated loss by evaporation and absorption from the Mukti Tank, after making deduction for leakage gauged below the dam :—

Kharif season—		
April to June 1893 (73 days)	...	2·10 feet.
July to September	...	Nil.
Rabi season—		
October to January 1894 (120 days)	...	2·03 feet.
Hot season—		
February to March 1894 (59 days)	...	1·27 feet.
Total	...	5·40 feet.
Average daily loss during the year	...	0·0214 feet.

20. The number of trees on this work at the end of the year was 4,433 :—

Anjan ...	...	40	Madsing ...	...	127
Awli ...	...	2	Nimb... ..	...	191
Babul ...	...	2,132	Nana ...	...	12
Bamboo ...	...	46	Siras ...	...	135
Bibla ...	...	110	Pipal ...	...	8
Bakam ...	...	9	Sadada ...	...	31
Dividivi ...	...	200	Sisum ...	...	137
Khirmi ...	...	2	Tamarind ...	...	140
Jambhul ...	...	231	Tiwas... ..	...	79
Koha ...	...	133	Teak ...	...	57
Mango ...	...	282	Umber ...	...	2
Moho ...	...	277	Sindi ...	...	50
			4,433		

And the expenditure thereon to end of the year was—

			Rs.
Capital ...	...	...	1,442
Revenue ...	...	...	5,368
			6,810

(7).—KADWA RIVER SYSTEM.

1. The Wághad Tank has been for nine years in partial operation. Owing to the waste weir not having been constructed as yet, the full supply level of the water rises some 18 feet short of the designed full supply level. At the close of the monsoon, however, a temporary bank is thrown across the waste weir channel, and some 8' additional storage can be obtained from the rain which usually falls in October.

2. From April 1st to June 2nd, 1893, a period of 62 days, the tank was continuously drawn upon to feed the canals. The expenditure of water from the tank after deducting the loss from evaporation was 65·349 million cubic feet. The flow in the river was 22 million cubic feet. Thus during this period 87 million cubic feet was used in watering 376* acres. The duty calculated on this data is 23 acres per cubic foot per second.

3. It is interesting to trace the course of the 87 million cubic feet during this season of the year. 65 million passed into the Pálkhed canal, showing a loss of 21 millions or 24 per cent. in 14 miles, that is, 4 cubic feet per second, or ·28 cubic feet per second per mile.

4. In the canal itself experiment shows that 42 per cent. is lost in evaporation and percolation. The experiment was made in January, and no doubt in April and May the loss would be greater. Deducting however 42 per cent. and 14½ million for the discharge at the tail of the canal, we have 23·78 million actually used in irrigating 243 acres on the Pálkhed canal which gives a duty of 54 acres per cubic foot per second.

5. In the Wadáli canal we have at the head 32·4 millions derived from springs between the Pálkhed and Wadáli weirs. Add to this 5·62 millions, tail discharge of the Pálkhed canal, total 38 millions. Deduct 40 per cent. loss by percolation and evaporation and the remainder, nearly 23 millions, is the quantity of water utilized on 66 acres, and the duty is 15 acres per cubic foot per second. This result is not so good as on the Pálkhed canal, but it is not based on such reliable data, as the area actually irrigated in the Thals is not accurately known, and the tail discharge of the Wadáli canal does not seem to have been gauged at the proper place. Again so much care in arranging a distribution system was not taken and was not necessary on the Wadáli canal as on the Pálkhed canal.

6. Similarly the Ojhar Tambat canal gives a duty of 23 acres per cubic foot per second.

7. As the final result it would seem that the tail flow of the Pálkhed canal 5·62 millions might have been saved from the tank, but practically this quantity is very small compared with the 87 millions supply, and on the whole the water may be considered to have been very economically and well managed.

8. There was a slight replenishment of about 5 millions cubic feet to the tank in the middle of May, but the water level continued to fall until May 27th, on which date the storage in the tank was 150 millions cubic feet. On June 19th, after 10·39 inches of rain had fallen from the beginning of the monsoon, the temporary dam was topped and the tank began to overflow, and the waste weir water continued to run until the 30th of September, when the temporary bank was begun. The water begins to flow in the waste weir channel at R. L. 110, at which level the storage is 197·64 millions cubic feet. The temporary dam brought the water level up to R. L. 114 on October 15th, giving a storage at the beginning of the new season of 262·35 millions cubic feet.

9. By January 1st, 1894, the natural supply had fallen so low that it was necessary to open the tank sluices to a discharge of 5 cubic feet per second, which was increased to 10 cubic feet per second on February 17th, and thus maintained until the close of the year.

10. Having worked out the duty of the water for the hot weather it may be thought interesting to do the same for the rabi season.

From October 15th to February 28th, we	Million cubic feet.
have supplied by the river	... 197·14
Do. do. tank	... 32·78
Total Supply	... 229·92

* From Irrigation operation Statement 322 Acres.
Permanent Bagayat (approximate) 54 "

Total ... 376 "

total 230 millions cubic feet irrigating *2,049 acres, allowing 163 acres for perennial bágáyat. This gives a duty of 104 acres per cubic foot per second.

11. The quantity of water flowing in at the head up the Páikhed Canal is 260 millions cubic feet, the 30 millions in excess of the supply at the tank being due to springs.

12. From 260 millions deduct flow at the tail, 35 million, and loss by leakage and evaporation 42 per cent., 109 millions, and the net quantity of water utilized, is 116 million cubic feet, irrigating 1,884 acres, the duty being thus 190 acres per cubic foot.

The duty for the Wadáli Canal is not worth considering.

13. The rain-fall in the tank basin was 63·33 inches against the average of 52·13 inches. Over the irrigated area the total of 25·77 inches (the average of fall at Páikhed and Niphád) is but slightly in excess of the average 25·25 inches for the last 20 years. The distribution according to seasons is :—

Locality of gauge.			Kharif.	Rabi.	Total.
Páikhed	...	...	27·66	0·66	28·32
Niphád	...	...	21·56	1·66	23·22

The season was characterised by a deficiency in the late rains. At Páikhed the rain practically ceased on the 17th of September, though at Niphád showers continued to occur till October 7th.

14. During the year water applications for 2,689 acres were received and the area actually irrigated was 3,027, the discrepancy being due to the approximate character of the areas as given in the water applications.

15. The following table shows the areas and assessments by seasons of irrigated land exclusive of permanent bágáyat :—

1893-94.

Canals.	AREAS.			ASSESSMENT.		
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Páikhed Canal ...	665	1,439	2,104	3,690	3,555	7,245
Wadáli Canal ...	185	200	385	798	508	1,306
Ojhar Támbat Canal ...	174	364	538	924	999	1,923
Total ...	1,024	2,003	3,027	5,412	5,062	10,474

16. The following table shows the average of the previous four years.

Canals.	AREAS.			ASSESSMENT.		
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
Páikhed Canal ...	880	1,201	2,081	4,329	3,064	7,397
Wadáli Canal ...	157	243	400	553	604	1,163
Ojhar Támbat Canal ...	133	164	297	570	413	983
Total ...	1,170	1,608	2,778	5,462	4,081	9,543

*These figures are the actual crops on the ground which are in excess of those given in Irrigation Operation Statement and returns owing to sugar being perennial and groundnuts classed as kharif.

17. The following statement shows the areas of the principal crops for the year under review compared with the average of the preceding five years:—

Name of Crops.	For the year 1893-94.	Average of the five preceding years.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Wheat	1,180	864	316	...
Groundnut	863	690	173	...
Gram	194	187	7	...
Sugar-cane	275	279	...	4

18. The total area irrigated shows an increase of 7 per cent. on the previous year and 9 per cent. on the average of the previous four years.

19. The most noticeable features of the year are that whereas on the Ojhar Tāmbat Canal, which is less effectually protected by the Storage Tank, the absence of rain at sowing time led to a decrease of 63 acres in wheat; on the other hand, the Pālkhed people put their faith in the tank and increased their wheat area by 54 acres. Again, owing to the deficiency of late rain, a large proportion of crops which are usually classed as rabi had to be watered in the kharif season. This is notably the case with groundnuts. The increase of 17 acres in sugar-cane on the Ojhar Tāmbat Canal, being the result of an extension, is a satisfactory feature.

20. The measuring of the crops was carried out at a cost of Rs. 223 for 3,027 acres, which gives a rate of 1 anna 2 pies per acre.

21. The duty of water in the canals has been worked out in the remarks relating to the storage tank. When calculated according to the ordinary method (as is done in the usual statement attached) it varies from 69 to 88 for the kharif season and from 98 to 107 for the rabi season.

22. A special observation of the quantity of water required to irrigate a field of wheat was made and some details will be found in the statement at the end. The result arrived at was 12,950 cubic feet, for 1 acre. This wheat is said only to have required two waterings owing to its being in rich black soil. The first watering occupied $3\frac{1}{2}$ hours and required 8,414 cubic feet, and the second $2\frac{1}{2}$ hours and 4,532 cubic feet. This is much less than is given in Jackson's Hydraulics.

23. Observations were made in October and in January to ascertain the loss from leakage and evaporation. The results are—

Canals.	Average loss in cubic feet per second per mile.		Percentage of head discharge lost.	
	Kharif.	Rabi.	Kharif.	Rabi.
Pālkhed Canal	24	53	27	42
Wadāli Canal	34	10	40	40
Ojhar Tāmbat Canal	22	17	29	30

Observations in May would be valuable, but no particular orders were given to take them in that month.

24. There were 9 closures in all during the year for silt and weeds clearance. Of these 5 were on the Pālkhed Canal and 4 on the Wadāli Canal, aggregating 24 and 19 days respect-

Canal closures.

ively; no formal closure of the Ojhar Tāmbat Canal occurred during the year, but the canal runs dry when the Pālkhed Canal is closed.

Arboriculture. 25. The total number of trees standing on the canals at the close of the year was 12,009; of these the principal were as under:—

Names of Trees.				Number of Trees.
Bābul	...	...	...	9,454
Mango	...	...	...	859
Nimb	...	...	...	486
Moho	...	...	...	634

26. The expenditure during the year was Rs. 220 from the Revenue Account.

Works of Maintenance and Improvement.

27. The following are the more important works carried out.

28. *Palkhed Canal*.—A masonry aqueduct in place of weir was built over a nāla at $3\frac{1}{2}$ miles and the alignment of the canal has been much improved at this place with a saving of 600 feet in length of canal.

29. *Ojhar Tāmbat Canal*.—Mile stones, furlong stones and bench marks have been fixed at a cost of Rs. 79.

30. The total assessment and the amount realized during the year are Revenue Accounts. accounted for as under:—

	Rs.	a.	p.
Assessment during the year	...	11,398	6 11
Unrealized rabi assessment for 1892-93	...	5,947	0 0
Unrealized balance from previous years	...	1,042	10 0
Miscellaneous receipts...	...	45	2 0
		18,433	2 11
<i>Deduct—</i>			
Total realizations during the year	...	11,274	11 6
Balance unrealized	...	7,158	7 5

The above figures include direct receipts, as noted below, except Rs. 594 for enhancement of land assessment—

	Rs.	a.	p.
(1) Sale of water	...	9	0 0
(2) Receipts from plantation	...	110	0 0
(3) Do. from other canal produce	...	197	0 0
(4) Alluvial Galper land above Pālkhed Canal weir (Right of occupancy for 10 years' lease from 1893-94 to 1902-03)	...	540	0 0
Amount of 1893-94	...	41	4 0
		581	0 0
(5) Rent of Buildings	...	27	0 0
		924	0 0

31. The total maintenance charges on the three canals and the Wāghad Tank during the year amounted to Rs. 7,897, and they are divided as follows:—

	Rs.
I.—Maintenance and repairs	...
II.—Establishment	...
III.—Tools and plant	...
IV.—Share of collection charges	...
V.—Indirect charges...	...
Total	7,897

82. It may be noted that at present we are only able to store 262·35 millions cubic feet in the tank, whereas the full capacity of the tank when the waste weir is built will be 605·55 millions. It is believed that immediately on the completion of the waste weir an additional revenue of Rs. 5,000 would be realized, and there is no fear of the tank not filling to its full capacity. Therefore, it seems advisable to build the waste weir as soon as possible.

Statement showing Water required to mature 1 Acre of Wheat Crop on Ojhar Tāmbat Canal, Nāsik District, in 1893-94.
(Vide para. 22 above.)

Village.	Survey Number.	Name of Crop.	Average.	Waterings.	Time for Waterings.	Depth of Water in inches over 2 feet Weir Board.	Discharges per second over the Weir.	Total cubic feet for each Watering.	Total Cubic feet for crop for all Waterings.	Remarks.
Datana	71	Wheat.	1	30th November 1893 ...	H: m. s.	•				
Do.	...	...	...	25th December 1893 ...	3 39 54	2·40	·638	8,418		
					2 35 25	2·00	·486	4,532		
									12,950	

(8).—PRAVARA RIVER WORKS—LAKH CANAL.

The area irrigated was 76 acres of kharif and 267 acres of rabi, or a total of 343 acres. The total shows an increase of 185 acres on the area of the last year, but in 1892-93 the rain-fall was exceptionally favourable. The area irrigated has been approximately stationary since the canal was opened, varying, however, year by year, with the rain-fall.

2. The following statement compares the area applied for and irrigated during the year:—

Year.	KHARIF.		RABI.		Total.		DIFFERENCE LESS IRRIGATED.			
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
1893-94	...	163	76	418	267	581	343	87	151	238

The area applied for but not irrigated is 69 per cent. of the area irrigated.

3. During the year the water-rate assessments amounted to Rs. 1,078, detailed as below:—

	Rs.
Khārif	515
Rabi	563
Total	1,078

The total amount of the assessment in the last year was Rs. 532; there is, therefore, an increase of Rs. 546, or 103 per cent., over the preceding year; but it was below the average of the last five years by Rs. 203, and it was only Rs. 77 more than the average of the last 19 years, that is to say, since the canal was opened.

4. The area irrigated per mile of main canal was kharif 3·30 and rabi 11·61 acres, and of main canal and branches was kharif 2·24 acres and rabi 7·85 acres. It is this small duty per mile of canal which accounts for the high cost of maintenance and repairs compared with the revenue.

* Comparison of area irrigated and revenue.

5. The following table compares the areas irrigated and revenue during the past three years with those of the year under report :—

Year.	Area irrigated.	Revenue from Water-rates.	Remarks.
	Acres.	Rs.	From 1st April to 31st March.
1890-91	433	1,250	Rainfall ... 15-82
1891-92	508	1,509	Do. ... 17-02
1892-93	158	532	Do. ... 32-41
1893-94	343	1,078	Do. ... 27-17

Water-rate per acre. 6. The incidence of water-rate per acre was Rs. 3-14 against 3-37 in the previous year.

Capital Account. 7. There was no expenditure from Capital Account. There was a net credit of Rs. 252 on account of transfer of material.

Working expenses. 8. The working expenses of the year were as follows :—

	Rs.
Maintenance and repairs ...	1,699
Share of establishment ...	1,360
Tools and plant ...	127
Share of collection charges ...	50
Indirect charges ...	190
Total ...	3,426

The working expenses of the last year amounted to Rs. 2,956. The increase in maintenance and repairs is due to a heavier charge for closing breaches and the special clearance having been made along 1st mile. The rate of working expenses this year per mile of main canal open is Rs. 149, and per acre irrigated is Rs. 9-99. It is hoped that the clearance effected to first mile may improve the supply to villages at tail of canal which are supposed not to have confidence in the sufficiency of the supply. The deficiency, however, can only exist in the hot season, and does not account for the small area under irrigation for rabi.

9. The duty per cubic foot per second of water admitted into the canal was 3-26 acres in the kharif and 13-81 acres in the rabi season. That of water actually utilized was 4-20 acres in the kharif and 15-19 acres in the rabi season.

10. The water-rates are the same as those in force since 1889-90, when the old rates were re-established. The rates are to be revised from the year 1894-95.

11. The total cost of measuring 343 acres during the year was Rs. 29, or one anna and 4 pies per acre against Rs. 31, or 3 annas and 1 pie per acre last year.

12. The rain-fall as gauged at Malunja was kharif 16-47, rabi 2-30, total 18-77 inches, or 1-80 inches less than the average of the last five years. The rain-fall in May 1893 and in February and March 1894 not included in the above figures was 8-40 inches.

13. The supply of water in the Pravara river was sufficient during the year under report to meet the requirements of the irrigators. The discharge of the river at Brahmangaon above the weir was 17-46 cubic feet per second on 1st April 1893 against 0-40 cubic feet per second on the same date in the previous year; that on 31st March 1894 was 19-34 cubic feet per second against 17-74 cubic feet per second on the

same date in the previous year. In December 1893 a temporary earthen bund, 2 feet high, was thrown on the weir as usual to increase the back water during the hot weather of 1894-95. The supply during the monsoon is practically unlimited.

14. A project for a storage reservoir at Samrad was being matured, and until this or some other storage is provided no great improvement in the revenue appears probable.

Storage reservoir.

Plantations.

15. At the end of the year the number of trees on this canal was 17,483. The number of principal kinds were:—

Bábul	12,857	Divi Divi	20
Nimbhara	24	Moho	3
Nimb	1,344	Jambhul	726
Bor	501	Siris	10
Sandal	19	Mango	641
Bakan	59	Bamboo	282
Tamarind	38	Miscellaneous	932
Mellingtonia	27		

The total number last year was 17,971. There is a decrease of 488 trees, and it is due to white ants, &c.

(9).—MUTHA CANALS.

On the 8th April 1893 the water at Lake Fife was 19.63 feet above the sills of the canal sluices; the minimum level was reached on the 7th June when the depth was 10.42 feet. The water began to rise on the 18th June and the lake filled to overflowing on the 20th of that month when the highest flood of the season occurred. This flood rose to a height of 3.75 feet above the finished crest of the weir, or 1.35 feet lower than the maximum recorded flood (1891).

The standards and planks were fixed on the weir by the end of September, and on the 15th October the water stood at 3 feet above the finished crest of the weir. A storm occurred early in October which necessitated some of the planks being removed and the water reduced so as to avoid a flow over the planks and putting a greater head against them than was necessary. After this storm the inflow into the lake was only sufficient to raise the water to 3 feet above the crest, or about 9 inches less than the previous year. The flow into the lake decreased much more rapidly than was expected owing to the October rains being exceptionally light and was the cause of the full 4 feet above weir crest not being stored. The quantity was sufficient for irrigation, and by strict economy in the distribution of water a greater area of perennial irrigation than in the previous year has been secured. The draw-off from the storage commenced from the 15th October, *i. e.* nearly 6 weeks earlier than the previous year. On the 31st March 1894 the level of the water was 18 feet above sills of the sluices, *i. e.* 1' 9" lower than on the same date in 1893.

Assessments of Revenue.

2. During the year under review the assessments amounted to Rs. 2,45,916 as detailed below:—

	Rs.
Water-rates	1,38,962
Sales of water	2,140
Water-supply of towns	93,509
Plantations	145
Water-power	6,000
Receipts from other canal produce	1,377
Rents of buildings	109
Miscellaneous	3,632
Irrigation share on account of enhanced revenue from percolation from the Mutha Canals in the villages of Warza Shwina and Kondve Dhawdi, taluka Haveli, as per Canal Return No. VIII...	42
	<u>2,45,916</u>

3. The area irrigated during the year was 8,259 acres, of which 6,634 were kharif and 1,625 rabi crops. The total shows an increase of 1,462 on the area irrigated in the previous year. The area of kharif was 1,715 acres greater and the area of rabi 258 acres less than the previous year. The increase in kharif is chiefly in perennial crops, the area of sugar-cane alone being 1,181 acres greater than last year. This accounts for the large increase in assessments. The decrease in the rabi area is due to the storage at Lake Fife being little more than sufficient for the standing perennial crops, and the area of rabi had to be restricted accordingly.

4. The revenue derived from water-supply of towns amounted to Rs. 93,509, showing a decrease of Rs. 3,669 on that of the previous year. This is due to the supply to the city of Poona having been very much less than the previous year, the stipulated quantity of 7,50,000 gallons a day, together with the supply from other sources, having proved to be sufficient. Omitting this item, the increase in the revenue from water rates in the Cantonment shows an excess of over Rs. 2,000 compared with the previous year.

5. During the year the improvements to the Poona water-supply works were commenced and had made good progress by the end of March. The works consist of (1) 5 new settling tanks, each containing a little over 1 day's supply; (2) converting the 4 old settling tanks into filter beds; (3) converting the 3 old filters into pure water tanks; (4) roofing in the pure water tanks; and (5) alterations in the pumping machinery. Provision has been made for measuring the rate of filtration and maintaining the rate at what is known to be best for the most perfect filtration of the water.

6. Owing to the alterations in the works, it has not been possible to measure the quantity of water supplied. The figures showing the actual consumption can only be obtained when the new works and alterations in the pumping machinery are completed.

7. The working expenses of the year amounted in all to Rs. 67,211, of which Rs. 42,334 are debitable to the maintenance of irrigation and Rs. 24,877 to the maintenance, &c., of the water-supply; the latter amount includes expenditure incurred in pumping done by water-power, working the new steam pumps for trials and for working them for a few hours once every month to keep them in good working order. There was no necessity to use steam-power during the year as the discharge in the canal was sufficient to work the water-wheel at all times. The cost of the maintenance of the canal and irrigation was Rs. 42,334 as compared with Rs. 52,245 in the previous year, and represents a rate for maintenance, administration, &c., of Rs. 481.07 per mile of main canal opened and Rs. 5.12 per acre irrigated. The above figures are inclusive of all establishment charges. The actual cost of maintenance of the Poona Water-supply for works alone amounted to Rs. 11,822 as compared with Rs. 16,332 in the previous year. The figures for the Mutha Canals under the same heading were Rs. 19,225 as compared with Rs. 22,170 in the previous year.

8. Deducting the total working expenses, Rs. 67,211, and Rs. 3,436, the amount of remissions and refunds, from the total earnings, Rs. 2,45,916, the net profits from the work amount to Rs. 1,75,269, or Rs. 2.71 per cent. on Rs. 64,74,696, the total entire capital outlay to the end of the year.

9. The areas irrigated were ascertained by actual measurements, the greater part of which were taken by measurers specially entertained for the purpose and the remainder by an Inspector when time could be spared from his ordinary work, and from 9 to 12 per cent. of the area was checked by the subordinate in charge. The cost of measurements amounted to Rs. 1,167-10-0, or at the rate of 2 annas and 3 pies per acre against 2 annas and 6 pies in the previous year. The cost of measurement must always be higher on the Mutha Canals than other works, because the crop being chiefly sugar-cane assessed at a high rate, the greatest care and accuracy is necessary in taking the measurements.

10. The rain-fall of the year along the canal varied considerably. The maximum was 30.66 inches at Hadapsar and the minimum 12.65 inches at Kedgaon as under :—

			Kharif.	Rabi.	Total.
Hadapsar ...	...	...	28.73	1.93	30.66
Kedgaon ...	...	...	11.41	1.54	12.65

11. The characteristics of the rain-fall last year were that the kharif was plentiful, with a heavy fall early in the season, and the rabi very scanty, there being very few of the usual eastern storms in October.

12. A statement is appended, giving the particulars of the water issued gratis or at reduced rates to various institutions in accordance with the orders issued by Government from time to time. From it it will be seen that local institutions have received water during the year at Rs. 5,647 less than the normal rates.

13. The following is the comparison of areas as applied for and those actually irrigated :—

	AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Mutha Right Bank Canal ...	4,962	2,541	7,503	5,900	1,415	7,315	938	...	...	1,126
Mutha Left Bank Canal ...	796	150	946	734	210	944	...	60	62	...
	5,758	2,691	8,449	6,634	1,625	8,259	938	60	62	1,126

The area applied for is sometimes more than the actual, owing to the people estimating the areas in bighas instead of acres. In the kharif season the area irrigated was more than applied for, as it was found possible to allow the larger area to be irrigated owing to a plentiful supply being available.

14. Remissions amounting to Rs. 65 have been granted during the year :
 Remissions. of this Rs. 32 are on account of penal assessments reduced to single rates and Rs. 28 on account of erroneous assessment. Rs. 5 were written off as bad debt.

15. Refunds amounting to Rs. 3,371 were sanctioned during the year, of which Rs. 68 are on account of erroneous assessments, Rs. 15 short supply of water, and Rs. 855, rebate given to the Indian Paper Mills Company for the year 1893-94 for 52 days, that is, 26 days being short of 60 horse-power and 26 days canal closure ; also Rs. 2,433 rebate to the Indian Paper Mills Company for the year 1892-93 for 148 days, that is, 132 days being short of 60 horse-power and 16 days canal closure.

16. The plantations and canal fences were maintained as usual ; but the trees were not counted as the establishment was fully employed on other duties.

17. Gaugings to ascertain evaporation and leakage were taken for broken periods in the months of April, May, June, December, January, February and March, or a total number of days 198. During this period the loss amounted to 448,625,760 cubic feet, or a little less than $\frac{1}{4}$ of the total capacity of the lake above outlet level. Special Gaugings were taken in April 1893 to ascertain the loss by leakage in the Right Bank Canal in the first 10 miles. The discharge was measured at the head-works through the canal sluices, at some of the aqueducts, and in the rock cutting close to the pumping station below the 10th mile. The result of these observations was that the loss amounted to $\frac{1}{4}$ a cubic foot per second per mile.

After the monsoon, a careful examination of the land below the canal in the first 10 miles was made with the view of detecting and locating the leakage direct from the canal. It was found that in the first $5\frac{1}{2}$ miles leakage was not traceable, but between $5\frac{1}{2}$ and 7 miles it was considerable. A great deal of it was however noticed to be due to drainage from sugar-cane fields, and only in

one place, *viz.* in the 7th mile, where the canal is carried round a rocky spur by means of a masonry wall, was the leakage found direct from the canal. By means of channels and their plate gauges it was found that the quantity leaking from this wall alone amounted to $1\frac{1}{4}$ cubic feet per second, sufficient for nearly 100 acres of sugar-cane. A portion of this leakage was used for a small area of sugar-cane, but most of it went to waste. The principal points where leakage was noticed in the wall were marked, and during the canal closures the inside joints were pointed with cement; the leakage was so far stopped that the sugar-cane crop formerly irrigated by it had to be served from the canal direct. In a few cases leakage was found through the banks near masonry walls and these will gradually be stopped by puddling; the leakage through canal cuttings and banks it is impossible to check, and it is now proposed to bund up all the nálas fed by leakage from the canal and use the water for irrigation. This has already been done in some of the larger nálas.

18. In Statement I. E. the duty is shown to be 43·65 acres per cubic foot per second for the kharif and 11·27 for the rabi. In the case of the kharif season it is impossible to obtain a correct average, because some of the previous year's perennial and 8 months' crops are irrigated between 15th June and end of March. New sugarcane is planted during the same period—between March and June, hot weather crops are grown, and from June to October the canal is run full, in order to fill the Matoba Tank, and the discharge is much in excess of the requirements for irrigation. In the case of the rabi season the perennial and 8 months' crops are irrigated in addition to the ordinary rabi crops and a more accurate result can be obtained than in the kharif season. The average discharge during the rabi season was 144·15 cubic feet per second and the area under irrigation was 5,789 acres, giving a duty of 51·4 acres to the cubic foot per second. Correct results can also be obtained for the period between 15th January and the 15th June, when practically the whole area is for perennial crops fourth-fifths of which is sugar-cane. The average discharge of the two canals at the head for this period in 1893 was 141·15 cubic feet per second, for an area of 5,491 acres, giving a duty of 38·9 acres. During the period between 15th January and 15th June 1894, the discharge was 108·25 cubic feet per second and the area under irrigation was 5,994, giving a duty of 55·3 acres per cubic foot per second. As nearly the whole area was sugar-cane while the period referred to was when the consumption of water was at a maximum, the increase in duty to over 50 acres is very satisfactory. This result, it is hoped, cannot only be maintained but be improved upon next year.

POONA WATER-SUPPLY.

Statement showing Water-supplies given gratuitously or at reduced rates during 1893-94.

To whom supplied.	Quantity supplied.	Amount paid.	Value at 6 annas per 1,000 gallons.	Difference between 4 and 5.	Remarks.
1	2	3	4	5	6
		Rs. a. p.	Rs. a. p.	Rs. a. p.	
The Civil Surgeon, Sassoon Hospital...	625,320	117 8 8	234 7 4	117 3 8	
Do. do. ...	626,520	117 7 3	234 14 6	117 7 3	
Superintendent, Byramji Jijibhoy Medical School ...	466,288	87 6 8	174 13 4	87 6 8	
The Superintendent, Lunatic Asylum. Secretary. Cantonment Com-mittee:—	277,873	53 1 3	104 2 6	52 1 3	
" (New Modikhana) ...	1,201,460	225 4 1	450 8 2	225 4 1	
" (Beef Market) ...	1,338,328	250 15 0	501 14 0	250 15 0	
" (Malcolm Tank) ...	1,338,328	250 15 0	501 14 0	250 15 0	
" (Mutton Market) ...	1,338,328	250 15 0	501 14 0	250 15 0	
" (Asurkhana) ...	1,460,000	273 12 0	547 8 0	273 12 0	
" (Butler Mohla) ...	1,460,000	273 12 0	547 8 0	273 12 0	
Convent School ...	2,74,580	51 7 6	102 15 0	51 7 6	
Jamsetji Fountain ...	1,095,000	.....	410 10 0	410 10 0	
Honds in Booty Street ...	4,380,000	.....	1,642 8 0	1,642 8 0	
Bazar Reservoir ...	1,460,000	.....	547 8 0	547 8 0	
Malcolm Tank ...	2,920,000	.....	1,095 0 0	1,095 0 0	
				5,646 13 5	

(10).—EKRU'K TANK.

The rain-fall for the year under report was 24·22 inches (kharif 15·16 and rabi 9·06) against 35·34 inches of the previous year (kharif 25·62 and rabi 9·72) and was seasonable.

2. The area irrigated during the year was 2,889 acres, of which 2,247 were kharif and 642 rabi, against 3,038 acres of the previous year (kharif 2,425 and rabi 613). The area applied for was 2,537 acres (kharif 1,931 and rabi 606), or 352 acres less than actually irrigated; the cause is that the cultivators are unable to estimate the area they propose to irrigate.

3. The assessment on account of water-rate amounted to Rs. 14,364 against Rs. 14,760 of the previous year. The gross revenue from all sources was Rs. 24,357 against Rs. 23,830 of the previous year. The details of revenue other than water-rate are as under :—

	Rs.
Plantations	334
Other canal produce	4,001
Sholapur Municipality for water supplied for drinking purposes	3,568
G. I. P. Railway Company for water-supply for engines.	1,152
Spinning and weaving mills, Sholapur, for do. .	562
Sholapur Distillery, &c., for do.	76
Miscellaneous	300
Total	9,993

4. The following statement gives comparison with previous years.

Year.	Kharif.	Rabi.	Total.	Water-rate assessed.	Gross Revenue.	Working Expenses.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
1887-88...	1,357	757	2,114	6,651	13,784	15,953
1888-89...	1,620	1,356	2,976	7,652	15,209	14,666
1889-90...	1,335	1,199	2,534	9,441	18,532	13,231
1890-91...	1,835	763	2,598	10,188	23,516	13,824
1891-92...	1,935	1,202	3,137	13,125	27,470	13,770
1892-93...	2,425	613	3,038	14,760	23,830	27,043
1893-94...	2,247	642	2,889	14,364	24,357	26,411

5. This gives a decrease of 178 acres in kharif and an increase of 29 acres in rabi, the former is due to a less area of fodder and rice cultivation caused by improvement work of the perennial canal during early part of the year and the latter is due to development of irrigation at the tail of the canal which was brought into operation during the latter part of the year. The incidence of water-rate per acre irrigated was 4·97 against 4·86 of the previous year.

6. The rain-fall over 159 square miles catchment area was gauged at one place only and amounted to 29·22 from 1st June to 31st October 1893 representing 10,794 millions of cubic feet of water which fell on the catchment area. The run-off into the tank was 0·196. The waste weir began to flow on 13th October 1893 and the run-off to that date was 0·19. The greatest depth of water flowing over the waste weir was 2·60 feet on the 14th October 1893.

Area irrigated, water-rates, &c., on each canal.

7. The area irrigated by each canal and water rate assessment thereon were as follows :—

Name of Canal.	Average discharge during the year.	AREA IRRIGATED.						REDUCED LEVEL OF WATER ON 5TH JUNE.		REMARKS.
		Kharif.		Rabi.		Total.		R. L. on 5th June, 1893.	Height of Water over sill in feet.	
		Acres.	Amount.	Acres.	Amount.	Acres.	Amount.			
Left Bank Low Level Canal.	35.67	1,648	* Rs. 8,520	533	Rs. 1,955	2,181	Rs. 10,475	198.97	33.22	The waste weir began to flow on 13th October 1893.
Left Bank High Level Canal.	3.95	291	2,198	17	33	302	2,231		8.39	
Right Bank High Level Canal.	8.92	308	1,320	98	338	406	1,658		8.45	
Total ...		2,247	12,038	642	2,326	2,889	14,364			

8. The working expenses, including indirect charges, amounted to Rs. 26,411. The item "Maintenance and Repairs" amounted to Rs. 5,105 and "Improvement" to Rs. 7,777, representing Rs. 106 per mile of canal.

Measuring charges. 9. The area irrigated was measured at a cost of Rs. 490, or annas 2 and pies 8 per acre.

Evaporation and absorption. 10. The following calculations show the loss of water due to evaporation and absorption :—

Total quantity of water in tank ... 4,115,186,461

Total quantity of water discharged through canals ... 1,503,230,515

Actual quantity on 31st March 1894 ... 2,195,539,613

3,698,770,128

Quantity lost by evaporation and absorption ... 416,416,333

11. At the end of the year the number of trees above and below 5 feet on this work was 134,573 :—

	Above 5 feet.	Below 5 feet.
Bábul ...	55,588	74,861
Nimb ...	1,213	132
Mango ...	642	170
Jámbul ...	79	33
Tamarind ...	110	151
Siras ...	136	24
Chandan ...	40	43
Nimboni ...	94	13
Sindi ...	32	305
Bori ...	35	5
Bamboo ...	178	9
Moho ...	8	2
Guava ...	16	6
Miscellaneous ...	561	81
Total ...	58,733	75,840
	134,573	

and the expenditure on them was Rs. 928.

12. The perennial canal was improved during the year by removing silt from bed and sides; the banks were raised and dry stone pitching works towards the tail renewed. The tail portion of the canal having thus been brought into operation, will allow of lands being irrigated where water has not hitherto been available. The quantity of work done and its cost has been given in the Administration Report of the year.

The right bank canal is in a very bad state; there is no bank on the upper side and rain-water enters the canal and brings a large quantity of silt into it, which renders the cost of annual repair very high. The revenue from this canal is insufficient to keep it in good repair.

(11).—KRISHNA CANAL.

The capital account of this canal was closed at the end of March 1892. The sanctioned works, which were not finished when the construction estimate was closed, were completed during the year under report with the exception of the stop-gate on Nála No. 21, which could not be completed owing to difficulty in closing the canal on account of the sugar-cane. Rs. 4,353 on "Works" were spent on the capital account of this canal during the year.

2. The rain-fall as gauged at Retre Budruk in the 15th mile of the canal is shown in the following table :—

Year.	Kharif.		Rabi.		Total.
	In.	cts.	In.	cts.	In. cts.
1893-94	14	50	5	59	20 09
1892-93	26	68	9	45	36 13
<i>Average.</i>					
1889-92	19	14	8	76	27 90

3. The area irrigated, the assessments, working expenses and average water rate as compared with the averages of the previous four years, were as follows :—

Year.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1893-94	2,810	34,918	2,932	7,165	4,742	42,083	8-87	13,004
<i>Average.</i>								
1889-92	2,103	26,875	2,110	7,663	4,213	34,538	8-28	14,320
Increase	707	8,043	...	...	529	7,545	59	...
Decrease	...	...	178	498	...	...	...	1,316

As compared with the average of the previous four years, there is an increase of 707 acres in the kharif season due to deficient rain-fall and a decrease of 178 acres in the rabi, due to favourable rainfall. The net result is an increase in assessment of Rs. 7,545 over the average. This increase is due partly to insufficient rain-fall during the year, and partly to the cultivators taking greater advantage of the canal, having learnt by experience the profit to be derived from irrigation.

4. The principal crops irrigated were sugar-cane 1,449 (1,149), rice 313 (181), wheat 268 (177), groundnut 2,105 (1,931) and jowári 180 (345).

The figures in brackets represent their average during the preceding four years.

5. The area irrigated was 18 per cent. of the irrigable area and the measured area was 5 per cent. more than that applied for.

6. The revenue from all other sources amounted to Rs. 1,419 (Rs. 1,113 from plantations alone), bringing the gross revenue of the year to Rs. 43,281.

7. The working expenses, including direct and indirect charges, amounted to Rs. 13,004, showing a decrease of Rs. 2,702 on the figures of the previous year. This represents a cost of Rs. 211 per mile of canal and distributaries open and Rs. 2-75 per acre irrigated. The percentage of working expenses to gross revenue was 30.

8. After deducting working expenses from the gross revenue there was a net profit of Rs. 30,277, equal to a rate of 4 per cent. on outlay of Rs. 8,18,292 for direct charges.

9. The average water-rate and cost of measurement as compared with the previous three years were as under :—

Years.	Total Area irrigated.	Average incidence of water-rate per Acre.	COST OF MEASUREMENT AND REVENUE ESTABLISHMENT.	
			Total Cost.	Per Acre.
	Acres	Rs.	Rs.	Rs. a. p.
1890-91	3,950	8-28	400	0 1 7
1891-92	5,374	7-31	549	0 1 7
1892-93	3,796	9-63	896	0 3 9
1893-94	4,742	8-87	1,230	0 4 2

During 1890-92 only measurement charges were included under this head, but a portion of the general canal establishment is now charged to it and moreover paid measurer's khalásis have been employed instead of utilizing, as before, the free services of village Mahárs. In 1892-93 these extra charges were debited for the second half of the year only, whereas in 1893-94 they were debited for the whole of the year. These are the causes of the largely increased charge in recent years.

To make a true comparison with previous years it is necessary to exclude the revenue portion of the ordinary establishment from this head. Making this deduction, the cost of crop measurement alone is reduced to Rs. 651 and Re. 0-2-9 per acre for 1892-93 and to Rs. 773 and Re. 0-2-7 per acre for 1893-94.

10. The average duty of water obtained was for kharif 46 acres per cubic foot per second and that for rabi, 19.

11. The number of trees of all classes on the canal at the beginning of the year was 24,486, and in addition 208 new saplings were planted. The number of trees cut and sold during the year was 1,080, the balance at its end was thus 23,616. The net revenue from plantation was Rs. 1,113.

The principal varieties are Bábhl 21,210, mango 681, nim 661, bamboo 458, and jámbhl 275. The canal plantations are greatly in need of thinning.

MINOR WORKS AND NAVIGATION.

(12).—KHARI CUT.

The rain-fall during the year was 41·07 inches in the kharif and 2·41 inches in the rabi season against 50·59 and 0·59 inches respectively during the previous year, the average of the last five years being as follows :—

	In. cts.
Kharif	26-53
Rabi	0-82

2. Although the rain-fall during the year was 7·70 inches below that of the preceding year, yet it was very seasonable and sufficient for the purpose of irrigation. The water of the Chandola Tank, the main storage reservoir for irrigation, was kept up to the full supply level throughout the kharif and rabi seasons; and the irrigated area and revenue were consequently much in excess of the figures of last year as shown below :—

	Kharif.	Rabi.	Total.
1892-93	778	64	842
1893-94	1,760	26	1,786

3. The assessments excluding remissions and free grants (the former being rupees nil and the latter Rs. 1,629) were as under :—

	Kharif.	Rabi.	Total.
	Rs.	Rs.	Rs.
1892-93	4,161	213	4,374
1893-94	9,789	128	9,917

The receipts this year were thus the highest on record, with the exception of those in 1887-88. No remissions had to be granted during the year as the water-supply was abundant both for kharif and rabi irrigation.

4. The working expenses of the year amounted to Rs. 4,702 against Rs. 4,249 in the previous year, the rate per acre being only Rs. 2·63 against Rs. 5·04 of that year.

5. The area under irrigation was measured by establishment specially maintained for the purpose at a total cost of Rs. 166 or $1\frac{1}{2}$ anna per acre.

6. The average water-rate during the year was Rs. 5·55 per acre as compared with Rs. 5·19 during the previous year.

7. The supply drawn from the Khári river during the kharif season at the head of the Khári Cut was at the rate of 11·57 cubic feet per second and the area irrigated was 1,760 acres plus the area assessed on the Chandola Tank, viz. 242 acres, making a total of 2,002 acres; these figures give a duty of 173 acres per cubic foot of discharge at head.

8. The discharge at head works during the rabi season was 0·75 cubic feet per second and the area irrigated was 26 acres, giving a duty of nearly 35 acres per cubic foot.

(13).—HARTA'LA TANK.

1. This tank has been in operation for 21 years.

2. At the commencement of the year, it was more than half full. The lowest level of water during the year was 4·40 feet below the full supply level on 11th June 1893. The water level began to rise after that date in the monsoon and the waste weir began to overflow on 28th August 1893. The tank remained full till the middle of October, when subsidence commenced, and by the end of the year the level of water was 3·60 feet below the crest of the waste weir. The contents of the tank were thus more than sufficient to meet the requirements of the area irrigated.

3. The rain-fall during the kharif and rabi seasons of the year was 29·85 inches as under :—

	Inches.
Kharif... ..	26·98
Rabi	2·87
Total	29·85

against 46·54 inches of the previous year and 25·55 inches, the average fall during the past 20 years.

4. The area irrigated during the year amounted to 118 acres against 99 acres in the previous year, and was distributed by seasons as under :—

	Acres.
Kharif	11
Rabi	107
Total	118

The increase as compared with the irrigation of previous year was 10 acres in kharif and 9 acres in the rabi season. In the kharif season water was taken for 4 acres of perennial crops, such as plantains and guavas, and 5 acres of monsoon dry crops which were sown late in the season.

5. The area irrigated was only 28·43 per cent. of the irrigable area of 415 acres under command. The remaining area under command is reported to have been under cotton cultivation, which pays a fairly good profit at comparatively small cost and trouble.

6. The crop assessment amounted to—

							Rs.	a.	p.
Kharif	...	...	...	...	...	...	49	10	0
Rabi	...	...	...	...	...	...	216	6	0
Total							266	0	0

and the revenue assessed from other sources amounted to—

							Rs.	a.	p.
Protective rate on irrigable land under command	...	...	...	...	...	...	411	2	0
Sale of bābul trees	...	...	...	...	...	...	542	0	0
Sale of grass, fishery, &c.	...	...	...	...	...	...	8	0	0
Total							961	2	0

The gross assessed revenue was thus Rs. 1,227-2-0 against Rs. 637-7-0 of the previous year. The increase is partly due to larger area irrigated, and partly to a considerable sale of bābul trees.

7. The demand for firewood for cotton factories and presses is day by day growing in the eastern portion of Khāndesh where cotton is largely grown, and a start was made during the year under report to sell full-grown bābul trees round the margin of the tank. Measures are being taken to keep up and develop bābul plantation round the tank margin.

8. The incidence of water-rate per acre during the year under report was Rs. 2-4-1 against Rs. 1-15-8 of the previous year. The increase is accounted for by the larger area irrigated of high rated crops.

9. There was no remission of water-rates during the year.

10. The realizations amounted to Rs. 1,205-13-0, made up of—

							Rs.	a.	p.
Water rates	...	...	...	...	...	...	244	11	0
Miscellaneous	...	...	...	...	...	...	961	2	0
Total							1,205	13	0

11. There are no outstandings. The rabi assessments of Rs. 216-6-0 of the year, which were sent for realization after the close of the year, remain to be realized.

12. The working expenses amounted to—

							Rs.
In the Public Works Department	...	...	...	...	...	...	328
In the Civil Department	...	...	...	...	...	...	33
Total							361

against Rs. 725 of the previous year. The assessments of the year were Rs. 1,227-2-0, as explained in paragraph 6 above. Deducting from them the working expenses of the year, the net amount earned by the tank was Rs. 866, which represents a percentage return of Rs. 1-80 on the direct capital outlay of the work, which is Rs. 47,948. This favourable result is due, to a great extent, to the considerable sale of bābul trees. It is expected that there will be some revenue every year in future from this source, as the bābul plantation round the tank margin is being developed as far as practicable.

13. The cost of measurements of the area irrigated was Rs. 2-5-4, which gives a rate of 4 pies per acre.

14. The area irrigated was 23 acres short of the area applied for, as will be seen from the following comparison :—

						Applied for.	Irrigated.
Kharif	...	...	...	...	...	17	11
Rabi	...	...	...	...	...	124	107
						141	118

The difference is due to over-estimate of areas in the water applications.

(14).—MHASWA TANK.

15. There have been no special observations to ascertain the duty of water used. In the kharif season the average discharge from the tank was 0.56 cubic feet per second, and in the rabi season 1.26 cubic feet per second gauged at the tank outlet. The duty given by these discharges on the respective seasons for a discharge of one cubic foot per second was as below :—

	Acres.
Kharif	19.64
Rabi... ..	84.92

16. The loss by evaporation and absorption was as follows :—

Kharif Season.

	Ft.
April to June 1893—69 days	2.00
July to September	Nil.

Rabi Season.

	Ft.
October 1893 to January 1894—109 days... ..	2.23

Hot season.

	Ft.
February and March—59 days	1.31
	5.54

Average daily loss 0.0234

(14).—MHASWA TANK.

1. This tank has been in operation for 17 years.

2. The water-supply in the tank was sufficient throughout the year to meet the requirements of irrigation, the extent of which has been larger this year than in previous years since 1889-90. At the commencement of the year the depth of water was 18.61 feet above the outlet sill. It gradually went down and reached the lowest depth of 16 feet on 27th May 1893. On the following day, viz. 28th May 1893, the tank had its first replenishment. From this date the level of water began to rise, and the tank filled to overflowing on 26th August 1893. After serving the demands of rabi irrigation and perennial crops, the depth of water in the tank at the close of the year was 16.38 feet above outlet sill, representing available contents of 73.23 million cubic feet.

3. The rain-fall in the year from 1st April 1893 to 31st March 1894 amounted to 23.39 inches against 40.79 inches in the previous year and 30.23 inches, the average of the past 16 years. By seasons the year's rain-fall was—

	Inches.
Kharif	18.75
Rabi	1.11
Total	19.86

The kharif or monsoon rain-fall was evenly distributed throughout the season; but the rabi rain-fall, though fairly good, was not sufficiently timely to make the crops independent of the canal water.

4. The following table contrasts the year's irrigation with that of the past four years :—

Years.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1889-90	16	189	205
1890-91	13	175	188
1891-92	17	104	121
1882-93	11	112	123
1893-94	18	211	229

- It will be seen that a large rabi area was irrigated from the tank water, and the year's total irrigation has been 86 per cent. in excess of the previous year. The crops grown were :—

In Kharif Season.

				Acres.
Guava	...	...	...	1
Plantain	...	...	...	8
Sugarcane	...	...	...	1
Chillies and onions	...	...	...	4
Fodder	...	...	...	1
Groundnut	...	...	...	1
Rice, Dodki	...	...	...	2
Total				18

and in *Rabi Season.*

				Acres.
Wheat	...	...	...	176
Gram	...	...	...	30
Peas	...	...	...	3
Jowári	...	...	...	2
Total				211

The jowári crop was sown late, and thus required water in the rabi season to come to maturity.

5. The value of the above crops is estimated at Rs. 3,592 by the Mahálkari of Párola.

6. The assessed revenue of the year amounts to—

			Rs.	a.	p.
Water-rates	...	...	549	8	0
Miscellaneous	...	...	1,073	15	3
Total Rs.			1,623	7	3

more than double the revenue in the previous year. This is partly due to the increase in the area irrigated, but mostly to the revenue earned from the sales of bábul trees, of the right of fishing, and of the lease of unsubmerged part of the tank bed for melon cultivation. The proceeds from the latter two sources were unusually large owing to the factions amongst the Kolis of Párola, one party trying to beat down the other in securing the leases put to auction. The right of fishing was sold for Rs. 201, and the lease for cultivation of tank bed in the hot weather for Rs. 172.

7. The average rate of assessment for water-rates was Rs. 2-6-4 per acre.

8. There have been no remissions during the year.

9. The realized revenue amounted to—

			Rs.	a.	p.
Water-rates	...	...	347	4	0
Other sources	...	...	1,073	15	3
Total Rs.			1,421	3	3

nearly double the amount realized in the previous year, owing to the large amount realized from other sources as explained in the concluding portion of paragraph 6 above.

10. There are no outstandings except the rabi assessments of Rs. 429, which were sent for realization after the close of the year.

11. There were no refunds during the year.

12. The working expenses amount to—

	Rs.
In the Public Works Department ...	1,995
Collection charges in the Civil Department ...	29
Total Rs. ...	2,024

This is nearly 47 per cent. in excess of the previous year, which was Rs. 1,888 in all. The excess is due to the construction of a new building at Utrud to keep stores in, and to give shelter to the karkun and to the other canal establishment. The old building situated near the tank, removed from human habitations, and which was twice attacked by thieves who were on one occasion successful in carrying away Government and private cash of the subordinate in charge, needed special repairs during the year. It was found that with the estimated cost of these special repairs and the material of the old building a new building could be erected near the village of Utrud. This has accordingly been done at a cost of Rs. 553. Excluding this cost, and the consequent establishment and indirect charges, the revenue outlay during the year will be found to be Rs. 940, which is less than the assessments of the year as given in paragraph 6 above by Rs. 683.

13. The cost of measurements of crops irrigated* was Rs. 13-11-4, which gives a rate of pies 11 per acre irrigated.

14. The area actually irrigated compares as below with the area applied for:—

Areas.					Kharif.	Rabi.	Total.
					Acres.	Acres.	Acres.
Applied for...	...	...	...	...	16	200	216
Assessed	...	...	...	...	18	211	229
				Difference	2	11	13

The excess in the rabi areas is due to under-estimates of areas in water applications.

15. The assessments of the year on account of water-rates were made as shown in the following table:—

Crops.					Area Irrigated.	Sanctioned scale of Water-rates.	Assessment.
					Acres.	Rs.	Rs.
I—Perennial	...	...	...	...	10	10	95
II—Eight months	...	...	...	...	5	4	20
III—Four months...	...	...	...	...	210	2	429
IV—Monsoon	...	...	...	...	3	1	3
V—Hot weather	...	...	...	...	1	4	3
					229		550

The slight difference apparent from checking the assessment on areas irrigated according to the rates given is due to round figures of areas being entered omitting or taking one for fractions. The area irrigated in the rabi season was nearly double the area of last year as the rainfall in the season, though fairly good, was not opportune, and as the cultivators had retained larger areas for rabi sowings.

16. The duty of water used for irrigation is as follows:—

Kharif—11.69 acres per cubic foot per second.

Rabi—77.86 acres per cubic foot per second.

No special observations were made for ascertaining duty.

17. The loss by evaporation and absorption was as under:—

<i>Kharif Season.</i>			Feet.
April and May, 1893—57 days ...	...	...	2.44
June to September 1893 ...	...	...	Nil.
<i>Rabi Season.</i>			
October 1893 to January 1894—115 days ...	...	...	3.22
<i>Hot Season.</i>			
February to March 1893—59 days ...	...	...	1.98
Total ...			7.64
Average daily loss ...	...	...	0.033

(15).—JAMDA CANALS.

1. The canals have been in operation for 27 years.
2. The following table contains a contrast of the year's supply of water in the Girna river above the Jamba weir, with the supply in the previous year:—

Minimum river discharge in different seasons.		1892-93.	1893-94.
		C. ft. per second.	C. ft. per second.
Minimum river discharge in the hot-weather at commencement of year (April, May and June) ...		0.58	33.98
Do. in Kharif season ...	...	100.95	376.33
Do. in Rabi season ...	...	165.46	158.59
Do. towards the close of the year (February and March).	...	63.04	60.88

The favourable and comparatively large water-supply in the beginning of the year encouraged perennial irrigation, and was availed of to a considerable extent for this class of crops. The extent of perennial irrigation during the year was 236 acres, against 52 acres of the previous year, and 37 acres during 1891-92. As regards perennial irrigation the year under report was the 4th best on record since the opening of the canals. The rabi supply though less was sufficient to meet all demands. The supply towards the close of the year, being almost the same as in the previous year, has helped somewhat to secure the confidence of the irrigators, and the extent of perennial irrigation in 1894-95 also will be considerable.

3. The favourable nature of the river supply during 1892-93 and 1893-94 is explained by the following rain-fall recorded in the catchment of the river, in comparison with the record of 1891-92:—

Stations.	1891-92.	1892-93.	1893-94.	Remarks.
Kalvan ...	20.74	28.95	38.06	Mámlatdárs' gauge.
Aliabad ...	37.54	46.17	44.01	Departmental gauge.
Satána ...	16.11	23.03	24.89	Mámlatdárs' gauge.
Málegaon ...	14.90	36.76	21.28	Do.
Nándgaon ...	22.46	36.57	21.20	Do.
Average ...	22.35	34.29	29.68	

The shortness of rain-fall during 1893-94 in the lower reaches of the river, as it nears the canals, accounts for shortness of the river supply in the rabi and following hot seasons, as compared with the figures of 1892-93.

4. The following table contrasts the record of the year's rain-fall in the canal district with the record of the previous year :—

Stations.	Kharif.		Rabi.	
	1892.	1893.	1892.	1893.
<i>At Canal head.</i>				
Jamda Bungalow ...	42·91	18·62	1·16	0·90
<i>About middle of Canals.</i>				
Kolgaon Chowki ...	45·07	19·24	2·33	0·10
<i>At tails of Canals.</i>				
Bhadgaon Kacheri ...	39·20	23·35	3·38	1·12

The rain-fall in the canal district was much less during the year, as compared with that of 1892, but was sufficient to meet the wants of all ordinary cultivation in both the kharif and rabi seasons.

5. The areas irrigated during the year were:—

				Acres.
Kharif	...	...	...	508
Rabi	...	...	...	1,086
			Total	1,588
Against—				
Kharif	...	...	...	757
Rabi	...	...	...	1,514
			Total	2,271

of the previous year. The falling off is due to large cultivation of cotton, and small areas being left for rabi sowings. About 148 acres of monsoon dry-crops had to depend upon canal water to come to maturity. This was however only $\frac{1}{4}$ th of the area of similar crops watered last year.

6. The assessments of the year amounted to:—

				Rs.
Water rates	...	...	...	6,630
Other sources	...	...	...	3,937
			Total	10,567

and are in excess of any previous year on record. This result is partly due to the increase in the perennial crop irrigation, and partly to the large sale of full grown Bábul trees on the canals. The Bábul plantations on the canals are now 27 years old. About 1,150 full grown Bábul trees were marked during the year, and sold by public auction. The price realised was about Rs. 3 per tree, the purchaser cutting the trees and removing the wood at his own cost. Good prices were realized as there is a rising demand for Bábul wood fuel for cotton presses and ginning factories in the neighbourhood. It is proposed to continue these sales of full grown Bábul trees in future years, all cuttings being replaced by new Bábul sowings. It is considered that this will be a good source of income on the canals in succeeding years.

7. There were no remissions during the year.

8. The realizations amounted to—

				Rs.
Water rates ...	...	...	...	6,422
Other sources	...	...	...	3,936
			Total ...	10,358

which were more than double the amount realized last year. Rs. 1,035 out of the demands on account of water-rates sent during the year to the Collector of Khândesh, remained unrealised. The reason of the large outstanding is not known, but the Collector's attention has been called to it, and it is expected that it will all be realized in the next year.

9. The water-rate assessment per acre was Rs. 4-2-10, against Rs. 1-13-5 of previous year. The increase is due to the large high-rated perennial crop area irrigated during the year. It obtained the requisite canal water in the hot weather owing to the favourable supply in the river, and had thus to pay full perennial rates instead of half rates, as was the case in the previous year.

10. The working expenses amounted to Rs. 8,915, against Rs. 12,369 of the previous year, which showed a considerable reduction in the charges. After deducting the working expenses from the year's assessments, there was a net revenue of Rs. 1,652 on the canals, a very unusual result for the Jamda Canals.

11. The cost of measurement per acre irrigated, separately on the two canals, was as given below :—

Canal.	Area irrigated.	Area measurements.	Cost of measurements.	Rate per Acre irrigated.
	Acres.	Acres.	Rs. a. p.	Rs. a. p.
Left Bank ...	1,169	569	43 15 6	0 1 3
Right Bank ...	419	80	3 9 0	0 0 9

40·8 per cent. of the area irrigated had to be measured, the remaining 59·2 per cent. of the area was in lands subdivided for irrigation purposes or in whole fields.

12. The areas assessed compare with those applied for as follows :—

	Kharif.	Rabi.	Total.
Applied for ...	514	1,024	1,538
Assessed ...	508	1,080	1,588
Difference ...	6	56	50

The difference is very small and calls for no remark.

13. In the following table the areas irrigated are classified according to seasons and rates :—

No.	Classification.	Area irrigated.	Assessment in Rs. at present scale of Water-rates.
		Acres.	Rs.
1	Perennial ...	236	3 778
2	Eight months ...	149	603
3	Four months ...	1,031	2,069
4	Monsoon dry ...	148	87
5	Hot weather ...	24	93
	Total ...	1,588	6,630

Some of the eight months' crops having been watered beyond the season, had to pay the four months' rate in addition, and some of the monsoon crops having been watered in the rabi season had to pay rabi rate. This accounts for the slight variations which appear on checking the amount of assessments from the areas of crops shown in the above table.

14. Special observations were made in the village of Kolgaon during the rabi season to determine the duty of water and the quantities required for the maturing of gram and wheat crops, with the following results :—

Survey Number.	Crop.	Number of waterings.	Area.		Quantity of Water used.	Duty (123 days).
			A.	g.		
96 Pot No. 3	Gram	3	2	15	66,744	378
96 Pot No. 2	Wheat	4	2	6	58,608	389

15. The number of trees on the canals at the end of the year was 15,974 :—

Ain	...	...	27	Mango	...	...	3,178
Anjan	...	...	39	Moho	...	...	834
Bábul	...	...	9,843	Madsing	...	...	17
Bábul Ramkoti	...	...	27	Nimb	...	...	1,043
Bamboo	...	...	188	Nimbora	...	...	80
Bibla	...	...	27	Nana	...	...	6
Bakul	...	...	8	Siras	...	...	38
Bakam	...	...	18	Sisum	...	...	123
Beheda	...	...	17	Sandal	...	...	3
Casuarina	...	...	23	Tamarind	...	...	98
Divi-divi	...	...	81	Tiwas	...	...	75
Jambhul	...	...	72	Teak	...	...	25
Kohu	...	...	84				
Total							15,974

and the expenditure thereon to the end of the year was :—

			Rs.
Capital	...	...	15,092
Revenue	...	...	632
Total Rs.			15,724

(16).—PARSUL TANK.

1. This tank has been in operation for five years.
2. The tank works are almost complete. Some work in connection with the improvements to Saundana channel and its extension to deliver water to Nándgaon lands remains to be done. This is expected to be finished by the end of 1894-95. The total capital outlay to end of the year, in comparison with the sanctioned estimate, is given in Statement II—A, attached to this report.
3. The works of Umrana bándhára and Right Bank Channel were completed during the year, and water was given by the new channel for rabi irrigation.
4. In addition to the sum of Rs. 330 realized last year by the sale of land taken up for the tank, but now restored for cultivation, the following sums were realized during the year :—

Village.	Survey No.	Area.	Compensation originally paid.	Proceeds now realised by sale.
		A. g.	Rs.	Rs.
Umrána	213	11 28	162	122
	219	8 39	406½	406½
Total ...			568½	528½

The short realization in the case of Survey No. 213 was due to the removal of the top soil for tank embankment. Survey No. 219 was taken back by the former holder after repaying the whole of the amount of compensation he had received.

5. The quantity of water stored in the tank sufficed to meet the demands of irrigation. At the commencement of the year the available storage was 67·13 million cubic feet, which gradually went down after meeting the demands of hot weather irrigation to 51·19 million cubic feet, on 29th May 1893. The tank began to fill from 30th May 1893, and overflowed on 25th June 1893. At the close of the year, the available tank contents were 45·31 million cubic feet.

6. The rain-fall from 1st April 1893 to 31st March 1894 (gauged at Umrána) amounted to 17·63 inches, against 35·76 inches of the previous year and 21·82 inches, which is the average of the past 11 years. The falls by seasons from the time the tank came into operation to end of the year under report, that is, for 5 years, are compared in the following table:—

Year.	Kharif.	Rabi.	Total.
	Inches.	Inches.	Inches.
1889-90	8·56	4·43	12·99
1890-91	12·75	3·47	16·22
1891-92	12·67	0·91	13·58
1892-93	33·27	1·64	34·91
1893-94	13·69	1·65	15·34

The year's rain-fall was less than half the fall of the previous year. It was however copious in the beginning of the monsoon, that is, in June. The falls in the three subsequent monsoon months were low, and created a demand for tank water for such areas as were sown late. The rabi rain-fall, though equal to last year's, was not timely.

7. The area irrigated during the year was 359 acres distributed as under:—

	Acres.
Kharif	69
Rabi	290
Total ...	359

against 338 acres of 1892-93.

8. The area irrigated in each village was as follows:—

	Kharif.	Rabi.
	Acres.	Acres.
Umrána	44	177
Saundana	25	111
Nándgaon	...	2
Total ...	69	290

and consisted of the following crops :—

	Acres.
Plantains	7
Sugar-cane	2
Guava	1
Fodder	15
Chillies	1
Onions	3
Methi	65
Wheat	139
Gram	70
Bajri	26
Sesame	10
Cotton	3
Maize	7
Sweet potatoes	2
Miscellaneous	8
Total	359

9. The water-rate assessment of the year amounted to Rs. 1,417-14-0 and the assessment from other sources to Rs. 8-5-0. The total assessed revenue of the year was thus Rs. 1,426-3-0.

10. The realizations during the year were as follows :—

	Rs.	a.	p.
Water-rates	1,338	11	0
Other sources	8	5	0
Total Rs.	1,347	0	0

11. There were no outstandings. The rabi demands of Rs. 1,165-3-0 were sent for realization after the close of the year, and will be realized in 1894-95.

12. The working expenses amounted to Rs. 970 against Rs. 1,071 of the previous year, inclusive of the collection charges in the Civil Department.

13. The net revenue earned by the tank after deducting working expenses from the year's assessment was Rs. 456.

14. The scale of water-rates per acre was as given below :—

Kharif	Rs. 1
Rabi	" 4
Hot weather	" 6

This scale was sanctioned for three years ending with the year under report, Orders have been received during the year to continue the same scale for another year pending the consideration of a scheme for permanent "thals" or káyam bagáit under the tank. The scheme has been drawn up, and is under consideration.

15. The year's assessments by seasons were as follows :—

	Area.	Assessment.
	Acres.	Rs.
Kharif	40	40
Rabi	294	1,182
Hot weather	25	196
Total	359	1,418

Under rabi are included eight months' crops, such as chillies and onions, and also late monsoon crops which were watered beyond the season, and had to pay the rabi rate. The hot weather crops include a few perennial crops which have paid the hot weather and the other seasons' rates also. It will be seen from the above that the tank is mainly a rabi irrigation work.

16. The measurements of crops were made by the canal establishment, and thus there was no separate charge on that account.

17. The area applied for compared as below with actual irrigation :—

			Kharif. Acres.	Rabi, Acres.
Applied for	...	...	44	144
Assessed	...	...	69	290
Difference	...	...	25	146

This was due partly to under-estimates in water applications, and partly to the káyam bágáit land of Soundana having been irrigated in the kharif and rabi seasons without applications. The question of the claim of Soundana irrigators to water the lands fixed as bágáit under the last settlement has been reported upon, and is believed to be under consideration. Pending its decision, the existing practice of assessing the lands under crop rates in addition to the consolidated rate, is being adhered to.

18. The calculated loss by evaporation and absorption was as under :—

Kharif Season.			Feet.
April and May 1893—59 days	...	...	2.53
July to September 1893—27 days	...	...	0.37
Rabi Season.			
October 1893 to January 1894—121 days	...	...	3.28
Hot Season.			
February and March—59 days	...	...	4.00
Total			10.18
Average daily loss			0.038

(17).—OJHAR CANAL.

The area irrigated was 352 acres of kharif and 1,891 acres of rabi, or a total of 2,243 acres. The total shows an increase of 1,143 acres on the area of last year, this increase being due to deficient rain-fall in September, October and November, the 3 months when rain-fall is generally most certain in this part of the country. Although there was an increase over last year, it was equal to the average of the preceding five years.

2. The following statement compares the area applied for and irrigated during the year :—

Year.	Kharif.		Rabi.		Total.		Difference less irrigated.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1893-94	418	352	2,912	1,891	3,330	2,243	66	1,021	1,087

The area applied for but not irrigated is 48 per cent. of the area irrigated. As it has not been the custom to return to the applicants one copy of sanctioned application, they appear not to have understood that they should only apply when they intend to use the water.

3. The total water-rate assessment of the year amounted to Rs. 6,030, being Rs. 2,022 for kharif and Rs. 4,008 for rabi, which, as compared with the year before, shows an increase of Rs. 2,559, or 74 per cent. Compared, however, with the average of the preceding five years there was a falling off of Rs. 236. The following figures give the average revenue for each period of five years since the canal was opened :—

	Rs.
1874-75 to 1878-79	1,718
1879-80 to 1883-84	3,905
1884-85 to 1888-89	3,773
1889-90 to 1893-94	6,208

The revenue is likely to increase steadily.

4. The area irrigated per mile of main canal was kharif 18·53 acres and rabi 99·53 acres, and of main canal and branches was kharif 8·80 acres and rabi 47·27 acres.

5. The following table compares the areas irrigated and revenue during the past three years with those of the year under report :—

Years.	Area irrigated.	Revenue from Water-rates.	REMARKS.
	Acres.	Rs.	From 1st April to 31st March.
1890-91	3,162	6,115	Rain-fall ... 25·24
1891-92	2,621	6,490	Do. ... 15·44
1892-93	1,100	3,474	Do. ... 37·72
1893-94	2,243	6,080	Do. ... 25·09

6. The incidence of water-rate per acre was 2·69 against 3·16 in the previous year.

7. The Capital Account is closed. There was a net credit of Rs. 40 on account of transfer of material.

8. The working expenses of the year amounted to Rs. 6,808, as follows :—

	Rs.
Maintenance and repairs	3,371
Share of establishment	2,817
Tools and Plant	84
Share of collection charges	142
Indirect charges	394
	<u>6,808</u>

The working expenses of the last year amounted to Rs. 5,892. The rate of working expenses this year per mile of main canal open is Rs. 358, and per acre irrigated is Rs. 3·04.

The increase on maintenance and repairs is Rs. 863, due to additional expense on repairs to breaches and special clearance to first 3 miles of the canal. There is also an increase on establishment charges, which is mainly due to direction charges.

9. The duty per cubic foot per second of water admitted to the canal was 11·11 acres in the kharif and 46·13 acres in the rabi season; that of the water actually utilized was 13·70 and 52·27 acres, respectively, in the two seasons. These very low duties are due to the small areas irrigated per mile of canal and the long lengths of many of the field channels.

10. The water-rates are the same as those in force since 1889-90 when the old rates were re-established. The rates are to be revised from the year 1894-95.

11. The cost of measuring 1,839 acres, excluding 404 acres sub-divided, was Rs. 202, or 1 anna and 9 pies per acre against Rs. 154 or 3 annas per acre in 1892-93.

12. The rain-fall, as gauged at Ashvi, was kharif 15·64, rabi 1·13, total 16·77 inches, or 5·13 inches less than the average of the last five years. The above figures exclude rain-fall in April and May 1893, during which 8·32 inches fell, most of which fell in May 1893.

13. The discharge of the river Pravara was sufficient to meet the requirements of the cultivators. On 1st April 1894 the discharge of the river at Jorwa above the weir was 39·40 cubic feet per second against 36·26 cubic feet per second on the same date in the previous year; that on 31st March 1894 was 40·47 cubic feet per second against 37·62 cubic feet per second on the same date in the previous year. In January 1894 a temporary earthen bund, 2 feet high, was thrown on the weir as usual to increase the backwater during the hot weather of 1894-95.

14. A project for a storage reservoir at Sámrad was being matured during the year, and on its construction must depend the extension of perennial crops. There is not now any deficiency of water for kharif and rabi crops.

15. At the end of the year the number of trees on this canal was 11,805. The number of principal kinds were :—

Bábul	...	8,893	Bakan	...	32
Mango	...	900	Jámbul	...	187
Do. grafts	...	50	Sandal	...	57
Orange	...	25	Nimb	...	1,435
Bore	...	110	Bámboo	...	35
Moho	...	5	Kyene	...	3
Siris	...	13	Miscellaneous trees	...	54

The total number last year was 12,629. 401 trees died on account of white ants and dry rot, &c. 453 bábul trees were cut down for preparing charcoal. The difference of 30 trees is due to a more careful count made of bábul trees sown broad-cast.

(18).—BHATODI TANK.

The area irrigated was 648 acres of kharif and 965 acres of rabi, or a total of 1,613 acres. The total shows an increase of 276 acres over the area of the previous year, which was one of abnormally heavy rain-fall. There has been very slight variation in the average area irrigated since 1883-84. The average for the previous 10 years has been 1,300 acres. The average area irrigated between 1878-79 and 1882-83 was 761 acres and between 1873-74 and 1877-78 was only 339 acres; there has therefore been a steady increase in area irrigated.

Comparison of area applied for and irrigated. 2. The following statement compares the area applied for and irrigated during the year :—

Year.	KHARIF.		RABI.		TOTAL.		DIFFERENCE.		
	Applied for.	Irrigated.	Applied for.	Irrigated.	Applied for.	Irrigated.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1893-94 ...	610	648	900	935	1,510	1,613	+38	+65	+103

The difference between the area applied for and that irrigated is due to the cultivators being unable to estimate correctly the area they propose to irrigate.

Water-rate assessment. 3. During the year the water-rate assessments amounted to Rs. 5,173, detailed as below :—

		Rs.
Kharif	...	3,076
Rabi	...	2,097

The total amount of the assessment last year was Rs. 4,038; there is, therefore, an increase of Rs. 1,135, or 28 per cent. The increase of revenue is partly due to double rates being charged under the canal rules to cultivators who took water without first submitting applications, but double rates were only charged when the fault clearly rested with the cultivators.

4. Rs. 13-3-2 were refunded to the irrigators. The amount had remained to be paid during the last year.
Refund of revenue.

5. The following table compares the areas irrigated and revenue during the past three years with those of the year under report:—
Comparison of area irrigated and revenue.

Year.	Area irrigated.	Revenue from Water-rates.	Remarks.
	Acres.	Rs.	From 1st April to 31st March.
1890-91 ...	1,251	4,143	Rainfall 23-26.
1891-92 ...	1,576	4,818	Do. 20-30.
1892-93 ...	1,337	4,038	Do. 46-63.
1893-94 ...	1,613	5,173	Do. 31-56.

As the rain-fall was very favourable the improvement in the revenue is most satisfactory, as it shows an increasing demand for canal water irrespective of rain-fall.

6. The incidence of water-rate per acre was Rs. 3-21 against 3-02 in the previous year. The increase is due to the increase in the area of perennial crops.
Water-rate per acre.

7. There was no expenditure during the year from Capital Account, which is closed.
Capital Account.

8. The working expenses of the year amounted to Rs. 4,148, detailed as below:—
Working expenses.

	Rs.
Maintenance and repairs ...	1,910
Share of establishment ...	1,540
Tools and plant ...	103
Share of collection charges ...	379
Indirect charges ...	216
Total ...	4,148

The working expenses of the last year amounted to Rs. 4,433. The rate of working expenses this year per mile of main canal open is Rs. 922 and per acre irrigated is Rs. 2-57.

9. The duty per cubic foot per second of water actually utilized was 152-83 acres in the kharif and 97-97 acres in the rabi season. These results are very satisfactory.
Duty of water.

10. The water-rates are the same as those in force since 1889-90 when the old rates were re-established. The rates are to be revised from the year 1894-95.
Water-rates.

11. The cost of measurement amounts to Rs. 19, or Re. 0-1-10 against Rs. 17 or Re. 0-2-2 per acre irrigated last year. Out of the irrigated area of 1,613 acres, 1,450 acres had merely to be inspected and checked with the registers of Pôt numbers and 163 acres had to be actually measured.
Cost of measurement.

12. The rain-fall, as gauged at Bhatodi, was kharif 18-78, rabi 5-61, total 24-39 inches, or 1-24 inches less than the average of the last five years. The rain-fall in April and May 1893 and in February and March 1894, not included in the above figures, was 7-11 inches.
Rain-fall.

13. On 1st April 1893 the water in the tank stood at 21-87 feet above sill of outlet sluice, i. e., at R. L. 91-87 against R. L. 75-65 on the same date in the previous year. The tank received its first replenishment on 28th May 1893, i. e., the R. L. of
Water-supply.

surface of water rose from R. L. 88.95 to 89.20. The highest level of water in the tank was 93.60 on 16th October 1893, *i. e.*, 1.10 feet above the crest of waste weir. The R. L. of surface of water on 31st March 1894 was 88.15.

14. At the end of the year the number of trees on the canal was 7,662. The number of principal kinds were :—

Mango	...	980	Jambhul	...	139
Do. grafts	...	17	Nimb	...	317
Tamarind	...	45	Sandal	...	161
Bore...	...	147	Siris	...	49
Orange	...	29	Bābul	...	5,189
Miscellaneous		...	...	589	

The total number last year was 6,461.

15. Rs. 542-5-0 remained to be realized at end of the year. Explanation of the non-recovery of the amount given by the Mám-latdār of Nagar Táluka is as under :—

- Unrealized balance.
- (1). Representation of the people of Pimpalgaon Landga that they did not take water.
 - (2). Delay in giving copy of Return No. III. of Sandwe village for recovery owing to mistake in the return.
 - (3). Notices being not issued by the village authorities at the proper time.

The Mám-latdār states that arrangements have been made for the early recovery of the amount. The Pimpalgaon cultivators were charged under Section 48 of Act VII of 1879.

(19).—MATOBA TANK.

The water in this tank stood at 25 feet above sill of outlet on 1st April 1893. The draw-off for irrigation reduced the level until the end of May, when it stood at 21.35 feet above outlet sill. The tank was filled to overflowing on the 25th June and on the 31st March 1894 the level was 17.50 above sill of outlet, or nearly 8 feet lower than the same date in the previous year.

2. The area irrigated from this tank during the year was 1,142 acres, of which 732 were kharif and 410 rabi. The total shows an increase of 257 acres as compared with the previous year, but is less than the area in 1891-92. The area of sugar-cane was very nearly up to the maximum, and the falling off as compared with 1892 is solely in the dry-crops which do not require water if the rain-fall is favourable.

The assessments of water-rates amounted to Rs. 10,790, and the miscellaneous revenue to Rs. 2, making a total of Rs. 10,792 against Rs. 6,359 in the previous year. The incidence of water-rates was Rs. 9.45 per acre irrigated against Rs. 7.06 in the previous year.

3. The area irrigated was ascertained by actual measurements, most of which were taken by measurers specially entertained for the purpose and the remainder by an Inspector in the intervals of his regular work. The total cost of measurements was Rs. 57-15-0, or 9 pies per acre as compared with 1 anna and 3 pies in the previous year.

4. The working expenses amounted to Rs. 2,571, which represented a rate per mile of canal in operation of Rs. 151.23, or 2.25 per acre irrigated.

5. The highest duty of water during the month in which no rain fell, was obtained in February 1894, when the area irrigated was 576 acres and the average discharge 6.53 cubic feet per second, giving a duty of 88.20 acres per cubic foot per second. The lowest duty in the dry season was in April 1893 when the area irrigated was 542 acres and the average discharge 10.30 cubic feet per second, giving a duty of 52.62 cubic feet per second.

6. The following is the comparison of areas irrigated and applied for :—

AREAS APPLIED FOR.			AREA IRRIGATED:			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
950	720	1,670	732	410	1,142	...	...	218	310

The decrease is due to the cultivators over-estimating the areas of their fields.

(20).—KÁSURDI TANK.

There was 13·15 feet water above sill of outlet in this tank on 1st April 1893. From the 28th May water began to rise and the tank filled to overflowing on the 10th June 1893. The water was drawn off for irrigation, and on the 1st March 1894 stood at 9 feet above sill of outlet.

2. The area irrigated was 41 acres of kharif and 83 of rabi crops, or 124 acres in all; the total shows an increase of 23 acres as compared with the previous year, or 23 per cent., due to sufficient water in the tank. During the hot season, when there was no water in the tank, the bed was utilized for the cultivation of melons, and Rs. 155 were obtained as rent.

3. The assessments amounted to Rs. 528, of which Rs. 339 were on account of water-rates and Rs. 189 for miscellaneous revenue.

4. The cost of measurements amounted to Rs. 5-9-0, or at the rate of 8 pies per acre as compared with 1 anna and five pies in the previous year.

5. The working expenses amounted to Rs. 465, which represent 3·75 per acre irrigated. The excess in working expenses was due to more silt clearance done this year and to the proportionate share of tools and plant having been charged to it.

6. The following table shows comparison of area applied for and irrigated :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
57	106	163	41	83	124	...	...	16	23

(21).—SHIRSUPHAL TANK.

On the 1st April 1893 the water in the tank stood at 25·78 feet above sill of outlet, i. e., 11·13 feet higher than on the same date in the previous year. The only replenishment received this year was in May and June when the water rose to 27·65 above outlet sill. With the exception of a small storm in October which caused a rise of 18" there was no replenishment from the eastern storms on which the tanks in this part of the district in a great measure depend for their supply. At the close of the year the water level stood at 14·80 feet above outlet sill, or 11 feet lower than the last year.

2. The areas irrigated were 475 acres of kharif and 438 acres of rabi crops, or a total of 913 acres against 786 acres in the previous year. The increase is due to the scanty rain-fall.

3. The assessments amounted to Rs. 3,526, of which Rs. 3,436 were on account of water-rates and Rs. 90 for miscellaneous revenue.

4. The areas irrigated were measured by measurers specially entertained for the purpose and partly by an Inspector when time could be spared from his ordinary work, and the measurements were checked as usual by the subordinate in charge. The cost was Rs. 51-7-0, or 10 pies per acre against 1 anna and 2 pies in the previous year.

5. The working expenses amounted to Rs. 3,852, which represents a rate for maintenance per mile of canal in operation of Rs. 308·16 and Rs. 4·22 per acre irrigated.

6. The highest duty of water in the month during which no rain fell was obtained in November, when the area irrigated was 485 acres, and the average discharge 6·45 cubic feet per second, giving a duty of 75·19 acres per cubic foot per second.

The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality. No useful information of the kind can be obtained for the rainy season, the canal being single-banked.

7. The following is the comparison of areas irrigated and applied for :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
702	426	1,128	475	438	913	...	12	227	...

The decrease is due to the cultivators over-estimating the areas of their fields.

8. Refund of Rs. 6 was sanctioned, due to erroneous assessment during the year.

9. To ascertain the loss by evaporation and leakage from the tank during the year, gaugings were taken for broken periods during the months of April to March inclusive, or a total number of days 322. During this period the loss amounted to 101,585,966 cubic feet, or rather more than one-third of the total capacity of the tank above outlet level.

(22).—BHĀDALWĀDI TANK.

At the beginning of the year the water level stood at 31·25 feet above the outlet sill, or 13 feet higher than on the same date in the previous year. The only replenishment received during the year was at the end of May. The October rain failed completely to add anything to the storage, and the result was that the water fell to 4 feet above outlet sill on the 19th March, i. e., the tank was practically empty.

2. The areas irrigated were 487 acres of kharif and 277 acres of rabi, making a total of 764 acres against 670 acres in the previous year. The increase was due to scanty rain-fall.

3. The assessment of water-rates amounted to Rs. 4,349 and the miscellaneous revenue to Rs. 54, making a total of Rs. 4,403 against Rs. 3,386 in the previous year. The areas irrigated were measured partly by a measurer specially entertained for the purpose and partly by an Inspector when time could be spared from his ordinary work. The total cost of measurements was Rs. 43-4-0, or 10 pies per acre against 1 anna in the previous year.

4. The working expenses amounted to Rs. 2,121, which represents a rate of Rs. 217·54 per mile of canal in operation and Rs. 2·78 per acre irrigated.

5. The highest duty of water obtained during the year was in June, when the area irrigated was 311 acres and the average discharge was 2·30 cubic feet per second, giving a duty of 135·21 acres per cubic foot per second. The

lowest duty in the year was in April, when the area was 323 acres and the average discharge 8.95 cubic feet per second, giving a duty of 36.08 acres per cubic foot per second. The duty was ascertained from the daily discharge observations and the known area of land under irrigation at the time. Special observations were not made with regard to any particular crop or locality.

6. The following is the comparison of areas irrigated and applied for :—

AREA APPLIED FOR.			AREA IRRIGATED.			MORE.		LESS.	
Kharif.	Rabi.	Total.	Kharif.	*Rabi.	Total.	Kharif.	Rabi.	Kharif.	Rabi.
687	236	923	487	277	764	...	41	260	...

The difference is due to the cultivators over-estimating the areas of their fields.

7. Refund of Rs. 10 was sanctioned on account of assessment reduced from penal to single rates.

8. To ascertain the loss by evaporation and leakage from the tank during the year, gaugings were taken for broken periods during April 1893 to March 1894, or a total number of days 286. During this period loss amounted to 106,621,441 cubic feet, or rather less than one-half of the total capacity of the tank above outlet level. The tank became empty on 19th March 1894.

(23).—KOREGAON TANK.

Rain-fall. The rain-fall for the year under report was 18.80 inches (kharif 14.50 and rabi 4.30) against 46.06 (kharif 38.60 and rabi 7.46) of the previous year.

2. The area irrigated during the year was 352 acres against 302 of the previous year; of this 94 acres were kharif and 258 rabi crops. There was no difference between the area applied for and that actually irrigated.

3. The assessment on account of water-rate amounted to Rs. 1,006 against Rs. 769 of the previous year; the gross revenue from all sources amounted to Rs. 1,015 against Rs. 779.

4. The following statement gives comparison with five previous years :—

Years.			Kharif.	Rabi.	Total.	Water-rate.	Gross Revenue.	Working Expenses.
			Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
1888-89 ...	...	...	151	79	230	714	1,289	757
1889-90 ...	...	...	13	323	336	743	746	895
1890-91 ...	...	...	121	99	220	530	599	773
1891-92 ...	...	...	66	363	429	1,061	1,073	886
1892-93 ...	...	...	47	255	302	769	779	1,087
1893-94 ...	...	...	94	258	352	1,006	1,015	822

5. The increase in the kharif is owing to the sufficient storage of water in the tank at the commencement of the season. The revenue from sources other than water-rates was Rs. 9 on account of sale of land let out for grazing purposes.

6. The working expenses, including indirect charges, amounted to Rs. 822, of which Rs. 354 were for "maintenance and repairs": this gives Rs. 94 per mile, the length of the canal being 3½ miles.

7. The irrigated area was measured at a cost of Rs. 118 or annas 5 and pies 4 per acre. The heavy charge is due to the smallness of area irrigated when compared with the establishment it is necessary to keep up. Some changes in the system of measurement and supervision are being introduced, by which the charges will be reduced next year.

8. The rain-fall over the catchment area, which is 4·4 miles, amounted to 18·50 against 44·96 of the previous year. This gives Tank supply. 189 millions of water that came in the tank, the run-off being ·396 of the total average rain-fall.

9. The following figures give the storage of water and loss by evaporation and absorption during the year :—

Quantity of water in Tank	...	C. feet. 148,915,840
Do, discharged through canals and waste weir	...	60,524,828
* Quantity in the Tank on 31st March 1894	...	66,706,200
		127,231,028
Quantity lost by evaporation and absorption	...	21,684,812

10. Special experiments were also made on this tank to determine the Duty of Water, duty of water, and the result was as under :—

Name of Crop.	Acres.	Quantity of water per Acre in Cubic feet.
Ground-nut...	147	1,433,78·5
Jowári ...	149	68,786

11. At the end of the year the number of trees above and below 5 feet on this work was 3,310.

	Above 5 feet.	Below 5 feet.
Bábul ...	2,130	910
Nimb ...	5	5
Mango ...	1	1
Jámbul ...	2	1
Támarind ...	13	...
Bori ...	25	20
Miscellaneous	116	82
	2,292	1,018
Total ...	3,310	

There was no expenditure incurred on tree plantation during the year.

(24).—ASHTI TANK.

The rain-fall for the year under report was 23·65 (kharif 15·05 and rabi 8·60) against 39·15 (kharif 29·35 and rabi 9·80) of the previous year, and was seasonable.

2. The area irrigated was 1,193 acres against 1,114, of which 711 were kharif and 487 rabi. The area irrigated was nearly the same as applied for; there was no difference, because the land under command has been divided into small irrigation numbers, and the cultivators know the area of land to be irrigated.

3. The assessment on account of water-rate was Rs. 3,860 against Rs. 4,176 of the previous year. The gross revenue assessed revenue. from all sources amounted to Rs. 4,207 against Rs. 4,687 of the previous year.

4. The following statement gives a comparison with the last five years :—

Years.	Kharif.	Rabi.	Total.	Water-rate.	Gross Revenue.	Working Expenses.
	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.
1888-89 ...	980	1,437	2,417	4,598	4,990	7,981
1889-90 ...	829	618	1,447	4,523	5,068	5,774
1890-91 ...	576	548	1,124	3,284	4,294	5,151
1891-92 ...	559	1,143	1,702	4,610	6,200	5,333
1892-93 ...	677	437	1,114	4,176	4,687	7,528
1893-94 ...	711	487	1,198	3,860	4,207	5,440

5. There was an increase of 34 acres in kharif and 50 acres in rabi; the former was due to eight months' crops and the latter to unfavourable rain-fall for jowári crop. The revenue other than water-rate was Rs. 347; it was on account of sale of land let out for cultivation and grazing, and sale of Bábul trees. The incidence of water-rate was 3'22 against 3'75 of the previous year.

6. The working expenses, including indirect charges, were Rs. 5,440, of which Rs. 2,410 were for "Maintenance and Repairs," representing Rs. 81 per mile of canal against Rs. 70 of the previous year.

7. No measuring charges were incurred as the lands under command have been sub-divided into small numbers and their areas are fixed.

8. The rain-fall over the 92 square miles catchment area was gauged in two places, and the average was 21'47 against 35'59 of the previous year. This gives 4,589 millions of cubic feet of water, which came into the tank. The run-off into the tank was 183 of the total average fall.

9. The following shows the storage of water and loss by evaporation and absorption during the year :—

Total quantity of water in the tank ...	...	1,766,906,008'10
Quantity of water discharged through canals and waste weir ...	...	977,966,217'60
Quantity in tank on 31st March 1894 ...	...	755,728,238'00
		1,133,694,455'60
Quantity lost by evaporation and absorption ...	...	633,211,552'50

10. Special experiments were made to determine the duty of water and the result was as under :—

Name of Crop.	Acres.	Quantity of Water required per Acre in Cubic feet.
Sugar-cane ..	107	2,94,820
Ground nut ...	181	1,15,519
Inferior rice ...	135	77,888

11. At the end of the year the number of trees above and below 5 feet on this work was 49,880:—

	Above 5 feet.	Below 5 feet.
Bábul	31,936	13,595
Nimb	1,875	220
Mango... ..	460	190
Jambul	198	45
Tamarind	70	3
Siras	19	...
Sindi	140	200
Orange	70	...
Bori	72	9
Bamboo	135	...
Guava	16	...
Miscellaneous	609	18
	35,800	14,280
Total	49,880	

And the expenditure on them was Rs. 262.

(25).—REVÁRI CANAL.

The Capital Account of this canal was closed on 31st March 1893—*vide* Government Resolution No. 125 A. I.—1015, dated 3rd July 1893, and Government Resolution No. 195 A. I.—1411, dated 12th September 1893. The only expenditure was that of Rs. 9-12-0, on "Works", paid on account of arrears of the previous year.

2. The rain-fall, as gauged at Revári, near the head-works, is shown in the following table:—

Year.	Kharif.	Rabi.	Total.
	In. cents.	In. cents.	In. cents.
1893-94	21 95	4 78	26 73
1892-93	22 78	8 94	31 72
Average, 1889-92	20 35	8 55	28 90

3. The area irrigated, the assessments, working expenses and average water-rate, as compared with the averages of the previous four years, were:—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1893-94	218	2,463	1,135	3,797	1,348	6,260	4-64	1,750
Average, 1889-92	179	1,916	846	2,763	1,025	4,679	4-64	2,018
Increase	34	547	289	1,034	323	1,581	...	...
Decrease	...	...	...	...	...	...	...	268

As compared with the average of the previous four years, there is an increase of 34 acres in the kharif and 289 acres in the rabi seasons. The latter large increase is due to a lesser rain-fall, while the river supply was sufficient for irrigation. The water-supply in the river was, however, less than that of the last year. It began to diminish by the end of October and gradually fell till the end of March 1894.

Remissions of Rs. 17 and Rs. 28 were granted in the kharif and rabi seasons respectively—*vide* Government Resolution No. 3610, dated 23rd August 1865. Revenue from other sources was Rs. 148, bringing the gross revenue to Rs. 6,408.

4. The principal crops irrigated were :—Sugarcane 97 (80), wheat 128 (139), jowári 340 (252), groundnuts 651 (470).

The figures in brackets represent their averages during the preceding four years.

5. The area irrigated was 37 per cent. of that irrigable and 12 per cent. in excess of that applied for.

6. The working expenses, including direct and indirect charges, amounted to Rs. 1,750 against Rs. 1,721 in the previous year, and are 27 per cent. on the gross revenue. The rate per mile of canal was Rs. 350, and the rate per acre irrigated was Rs. 1.29.

7. The operations of the year show a net profit of Rs. 4,658, or 8.24 per cent. on the direct capital outlay of Rs. 56,533. It must, however, be remembered that this is an old native work improved, and that the whole cost of construction is not included in the capital outlay.

8. The average water-rate and cost of measurement, as compared with the previous years, were as under :—

Years.	Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT AND REVENUE ESTABLISHMENT.	
			Total Cost.	Per Acre.
	Acres.	Rs.	Rs.	Rs. a. p.
1890-91	1,027	4.8	191	0 2 11
1891-92	837	5.76	160	0 3 0
1892-93	1,011	4.15	181	0 2 9
1893-94	1,348	4.64	217	0 2 7

The explanation of the increase in total cost is the same as that given under Krishna Canal. Excluding the charge for revenue establishment, the cost of crop measurement alone is reduced to Rs. 134 and to Re. 0-2-2 per acre for 1892-93 and to Rs. 140 and Re. 0-1-8 per acre for 1893-94.

9. The average duty of water obtained was for the kharif season 38 acres per cubic foot per second, and that for the rabi, 112.

10. The number of trees of all classes on the canal at the beginning of the year was 1,792 and that at its end was 1,828.

The principal varieties are bábul 1,198, bamboo 159, jámbhul 151, and mango 101. The net revenue from plantation was Rs. 133.

(26).—UPPER MAN RIVER WORKS.

The Capital Account of this project was closed on 31st March 1892—*vide* Government Resolution No. 125 A. I.—1015, dated 3rd July 1893, and Government Resolution No. 195 A. I.—1411, dated 12th September 1893. No expenditure was incurred on it during the year under report.

2. The rain-fall, as gauged at Gondwli, the centre of the irrigated area, is shown in the following table :—

Years.	Kharif.	Rabi.	Total.
	In. cents.	In. cents.	In. cents.
1893-94 ...	12 53	5 43	17 96
1892-93, ...	19 01	10 74	29 75
Average, 1889-92 ...	12 27	9 04	21 31

3. The area irrigated, the assessments, working expenses, and average water-rate, as compared with the averages of the previous four years, were as follows :—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1893-94 ...	942	5,133	548	1,938	1,490	7,071	4.75	5,119
Average, 1889-92 ...	792	3,157	516	1,741	1,308	4,898	3.69	4,451
Increase ...	150	1,976	32	197	182	2,173	1.06	668
Decrease ...	...	...	...	...	...	...	...	...

As compared with the average of the previous four years there is an increase of 150 acres in the kharif season, due to the tank having filled and one of 32 acres in the rabi season. The year's assessment is Rs. 2,173 more than that of the average. This increase is due to the supply in the Pingli Tank having been ample for all requirements, the depth of water on 31st March 1894 being 20.10 feet above sill level.

4. The principal crops irrigated were :—

Sugarcane,	Wheat,	Groundnut,	Jowari,
108 (52)	269 (221)	439 (213)	235 (231)

The figures in the brackets represent their averages during the preceding four years.

5. The area irrigated was 19 per cent. of the irrigable area and 6 per cent. in excess of that applied for.

6. The revenue from all other sources amounted to Rs. 118, bringing the gross revenue of the year to Rs. 7,190.

7. The working expenses, including direct and indirect charges, amounted to Rs. 5,119. The rate per mile of canal was Rs. 213 and per acre irrigated Rs. 344. The expenses amount to Rs. 71 per cent. on the gross revenue. The Bidal channel, which was constructed as a feeder to Pingli Tank, is not working satisfactorily; silt is deposited in it on account of numerous sharp curves in its course, and the velocity being checked, the water is headed back at the sluices near Pingli Tank. The increase in working expenses over the average of the previous four years is on account of the special repairs to Gondwli bungalow, on which latter Rs. 661 were spent in the year.

8. After deducting working expenses from the gross revenue there was a net profit of Rs. 2,071, equal to a rate of 0.5 per cent. on the outlay of Rs. 4,07,421 for direct charges.

9. The average water-rate and cost of measurement as compared with the previous four years were as under :—

(27).—YERLA RIVER IRRIGATION WORKS.

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT AND REVENUE ESTABLISHMENT.	
			Total Cost.	Per Acre.
	Rs.	Rg.	Rs.	Rs. a. p.
1890-91	1,370	4-27	123	0 1 5
1891-92	1,391	3-09	109	0 1 3
1892-93	1,039	2-90	303	0 4 8
1893-94	1,490	4-75	474	0 5 1

The reason for the higher cost of measurement is the same as that given in the report for the Krishna Canal. Excluding the charge for revenue establishment, the cost of crop measurement alone is reduced to Rs. 183 and Re. 0-2-10 per acre for 1892-93 and to Rs. 254 and Re. 0-2-9 per acre for 1893-94.

10. The average duty of water obtained was, for kharif 243 acres per cubic foot per second and for rabi, 68.

11. The following table shows the principal levels of the Pingli Tank :—

Date.	Above M. S. L.	Remarks.
31st March 1893	2,364-80	
20th May 1893	2,360-08	Lowest pre-monsoon level.
27th October 1893	2,371-09	Highest monsoon level.
31st October 1893	2,370-84	Level at end of monsoon.
31st March 1894	2,362-19	

The outlet sluice sill is at M. S. L. 2,342-09 and F. S. L. is at M. S. L. 2,371-09. There were no waste weir floods over 2 feet deep during the year.

12. The number of trees of all classes on the canal at the beginning of the year was 5,345 and at its end 5,245.

The principal varieties are :—

(1). Bábul	4,531
(2). Mangoes	39
(3). Jámbohul	32

The net revenue from plantation was Rs. 94.

(27).—YERLA RIVER IRRIGATION WORKS.

The works of re-constructing a portion of Nehr Tank Dam, Nehr Tank Service Road, and a chauki for a chaukidár on the Nehr Tank were in progress. The expenditure incurred during the year was Rs. 12,649 on "Works."

2. The rain-fall, as gauged at Khatgun near the head of the irrigated area, is shown in the following table :—

Years.	Khárif.	Rabi.	Total.	Remarks.
	In. cents.	In. cents.	In. cents.	
1893-94	18 98	6 50	25 48	
1892-93	27 09	11 36	38 45	
Average, 1889-92	19 86	9 61	29 47	

3. The area irrigated, the assessments, working expenses and average water-rate, as compared with the averages of the previous four years, were as under :—

Year.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1893-94 ...	424	2,076	1,534	4,910	1,958	6,986	3-57	5,954
Average, 1889-92 ...	787	4,549	1,167	3,586	1,954	8,135	4-16	6,222
Increase ...	...	...	367	1,324	4	...	...	...
Decrease ...	363	2,473	...	...	...	1,149	0-59	268

On account of the state of the Nehr Dam it was necessary to restrict the level of the water in the tank and consequently many applications for water for perennial and hot weather crops were refused; this and the fairly favourable rain-fall of the year caused a decrease in both area and assessment for the kharif season of 363 acres and Rs. 2,473 respectively, compared with the average results of the previous four years. On the other hand the rabi season shows an increase of 367 acres and Rs. 1,324 over the average results, due to smaller rain-fall and also to the fact that the cultivators were assured in this season of an ample supply of water in the tank.

Although there is an increase (Rs. 611) in revenue over that of the previous year, there is a falling off of Rs. 1,149 compared with the average of the past four years. This decrease is due to the fact that the cultivators have lost confidence in the Nehr Tank and this cannot be restored until the reconstruction of the dam is finished satisfactorily.

Remissions to the extent of Rs. 5 were granted—*vide* Government Resolution No. 107 W. 1.—327 of 22nd August 1877. The revenue from other sources was Rs. 762 and the gross revenue Rs. 7,748.

4. The principal crops irrigated were, groundnut 925 (724), jowari 396 (432), and wheat 321 (259).

The figures in brackets represent the averages during the preceding four years.

5. The area irrigated was 18 per cent. of that irrigable and 11 per cent. in excess of that for which applications were received.

6. The working expenses, including direct and indirect charges, amounted to Rs. 5,954, which represents a cost of Rs. 186 per mile of canal open and Rs. 3-04 per acre irrigated. The expenses amounted to Rs. 77 per cent. on the gross revenue.

7. The gross assessed revenue was Rs. 7,748 and the total working expenses amounted to Rs. 5,954. These have both decreased owing to the lesser acreage irrigated. The operations for the year show, therefore, a net profit of Rs. 1,794, or 0-28 per cent. on the direct capital outlay of Rs. 6,35,746.

8. The average water-rate and cost of the measurement, as compared with the previous three years, were :—

Years.				Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT AND REVENUE ESTABLISHMENT.	
						Total Cost.	Per Acre.
				Acres.		Rs.	Rs. a. p.
1890-91	...	...	...	1,814	4-6	276	0 2 5
1891-92	...	...	...	2,247	4-21	303	0 2 2
1892-93	...	...	...	1,831	3-48	466	0 4 1
1893-94	...	...	...	1,958	3-57	527	0 4 4

The reason for the higher cost of measurement is the same as that given in the report for the Krishna Canal. Excluding the charge for the revenue establishment, the cost of crop measurements alone is reduced to Rs. 301 and Re. 0-2-7 per acre for 1892-93 and to Rs. 212 and Re. 0-1-9 per acre for 1893-94.

9. The average duty of water obtained was for kharif 71 acres per cubic foot per second, and for rabi, 112.

10. The following table shows the principal levels of Nehr Tank :—

Date.	M. S. L.	Remarks.
31st March 1893	2634.80	
13th May 1893	2634.44	Lowest pre-monsoon level.
13th October 1893	2658.20	Highest monsoon level.
31st October 1893	2656.62	Level at end of monsoon.
31st March 1894	2650.98	

The outlet sluice sill is at M. S. L. 2,634.02 and F. S. L. is at M. S. L. 2,666.02. No floods passed on the waste weir, the level of the tank being restricted by the opening of the outlet sluices and by a 50 feet cut in the waste weir having its bed at M. S. L. 2,656.02.

From 13th March 1894 the water was run off to empty the tank by the end of May 1894 for the purpose of replacing the broken sluice rods by new ones of larger section.

11. The number of trees of all classes on the canal at the beginning of the year was 22,306 and that at its end was 22,167.

The principal varieties are mangoes 285, bābul 13,526, jāmbhul 100 and teak 90. The net revenue from plantation was Rs. 653.

(28).—CHIKHLI CANAL.

The Capital Account of this canal was closed on 31st March 1883—*vide* Government Resolution No. 125 A. I.—1015, dated 3rd July 1893; and Government Resolution No. 195 A. I.—1411, dated 12th September 1893. No expenditure was incurred on it during the year.

2. The rain-fall, as gauged at Chikhli near the head of the irrigated area, is shown in the following table :—

Year.	Kharif.	Rabi.	Total.
	In. cents.	In. cents.	In. cents.
1893-94	15 64	5 60.	21 24
1892-93	18 12	11 37	29 49
Average, 1889-92 ...	17 12	8 67	25 79

3. The area irrigated, the assessments, working expenses and average water-rate, as compared with the averages of the previous four years, were as follows :—

Year.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1893-94	291	1,724	79	309	370	2,033	5.49	924
Average, 1889-92 ...	300	1,293	71	268	371	1,561	4.24	999
Increase	...	431	8	41	...	472	1.25	...
Decrease	9	...	...	...	1	...	...	75

This year there is an increase over the average in kharif revenue of Rs. 431 and a decrease of 9 acres in acreage. In rabi there is an increase of Rs. 41 in revenue and 8 acres in area. The net increase in the water-rate assessment is Rs. 472 over the average of previous four years. This is due to a better class of crops being irrigated in the kharif season for which the assessment is higher.

4. The principal crops irrigated were, groundnut 205 (139), wheat 26 (30), and sugarcane 36 (17).

The figures in brackets represent averages during the preceding four years.

5. The area irrigated was 25 per cent. of the irrigable area and 7 per cent. less than that for which applications were received.

6. Revenue from other sources was Rs. 104 and the gross revenue amounted to Rs. 2,057.

7. The working expenses, including direct and indirect charges, were Rs. 924. The expenses amounted to Rs. 45 (63) per cent. on the gross revenue, and to Rs. 142 per mile of canal open and Rs. 2.49 per acre irrigated.

8. The operations of the year show a net profit of Rs. 1,133 or 2 per cent. on the direct capital outlay of Rs. 53,803.

9. The average water-rate and cost of measurement as compared with previous years were:—

Years.	Total area irrigated.	Average incidence of Water-rate per Acre.	Cost of measurement and Revenue Establishment.	
			Total Cost.	Per Acre.
	Acres.		Rs.	Rs. a. p.
1890-91	322	4.53	35	0 1 5
1891-92	375	4.10	No charge this year.	
1892-93	269	4.65	62	0 3 8
1893-94	370	5.49	113	0 4 10

The reason for the higher cost of measurement is the same as given in the report for the Krishna Canal. Excluding the charge for Revenue Establishment, the cost of crop measurement alone is reduced to Rs. 20 and Re. 0.1-2 per acre for 1892-93 and to Rs. 36 and Re. 0.1-7 per acre for 1893-94.

10. The average duty of water obtained was for the kharif season 68 acres per cubic foot per second and that for the rabi, 9.

11. The number of all classes of trees on the canal at the beginning of the year was 2,715 and at its end was 2,685.

The principal varieties are babul 2,519 and mango 72. The net revenue from plantation was Rs. 24.

(29).—MAINI TANK CANAL.

The Capital Account of this canal was closed on 31st March 1892, *vide* Government Resolution No. 125 A. I.—1015, dated 3rd July 1893, and Government Resolution No. 95 A. I.—1411, dated 12th September 1893. No expenditure was incurred on it during the year.

2. The rain-fall as gauged at Maini at the head of the irrigated area is shown in the following table:—

Year.	Kharif.	Rabi.	Total.
	In. cents.	In. cents.	In. cents.
1893-94	11 54	4 02	15 56
1892-93	23 45	12 68	36 13
Average 1889-92	15 40	10 56	25 96

3. The area irrigated, the assessments, working expenses and average water-rate as compared with the averages of the previous four years were as follows :—

Year.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.	Rs.
1893-94 ...	866	4,662	493	1,672	1,359	6,534	4.81	7,827
Average, 1889-92...	1,118	5,352	454	1,711	1,572	7,063	4.48	7,868
Increase ...	...	...	39	...	...	...	0.33	...
Decrease ...	252	490	...	39	213	529	...	41

The kharif area irrigated during the year is less by 252 acres and the rabi is greater by 39 acres than the average irrigated during the previous four years. The assessment during the year is less than that of the average of the past four years by Rs. 529. This decrease is due to the insufficient rain-fall and consequent small tank replenishment during the year under report. Owing to the large accumulation of silt, now 14 feet higher than the outlet sill, the water in the tank is insufficient to meet the demands in the hot season and, unless the contents of the tank are increased, the growth of irrigation cannot proceed.

4. The principal crops irrigated were :—groundnut 602 (522), wheat 150 (151), and sugar-cane 77 (82).

The figures in brackets represent averages during the preceding four years.

5. The area irrigated was 29 per cent. of the irrigable area under command of the canal and 6 per cent. in excess of that applied for.

6. The revenue from other sources amounted to Rs. 101 and the gross revenue to Rs. 6,633.

7. The working expenses, including direct and indirect charges, amounted to Rs. 7,827 or Rs. 481 per mile for canal open, Rs. 5.76 per acre irrigated and about 118 per cent. of the gross revenue.

8. The operations of the year show a loss of Rs. 1,194, which is due to the special works of "Improvements to the flood channel," "Diversion of Malhar-peith-Pandharpur road," and "Chaukies on Maini Tank Canal" having been carried out during the year from the Revenue Account. Deducting the expenditure of Rs. 3,550 on these works, the ordinary maintenance and repair charges were the same as in 1892-93.

9. The average water rate and cost of measurement as compared with previous years were as under :—

Years.	Total Area irrigated.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT AND REVENUE ESTABLISHMENT.	
			Total Cost.	Per Acre.
	Acres.		Rs.	Rs. a. p.
1890-91 ...	1,726	4.50	238	0 2 2
1891-92 ...	1,687	4.74	287	0 2 3
1892-93 ...	1,101	4.46	419	0 6 1
1893-94 ...	1,359	4.81	532	0 6 3

The reason for the higher cost of measurement is the same as that given in the report for Krishna Canal. Excluding the charge for revenue establishment, the cost of purely crop measurement alone is reduced to Rs. 311 and Re. 0-4-6 per acre for 1892-93 and to Rs. 334 and Re. 0-3-11 per acre for 1893-94.

10. The average duty of water obtained for the kharif season was 195 acres per cubic foot per second and for the rabi season, 59.

11. The following table shows the principal levels of the Maini Tank :—

Date.	Above M. S. L.	Remarks.
31st March 1893	2,298·01	
11th May 1893	2,295·96	Lowest pre-monsoon level.
13th October 1893	2,300·72	Highest monsoon level.
31st do. do.	2,299·59	Level at end of monsoon.
31st March 1894	2,289·94	

The outlet sluice sill is at 2,269·32 above M. S. L. and F. S. L. at 2,300·52 above M. S. L.

The average depth of silt above the outlet sluice is 14 feet. There were no waste weir floods over 2 feet deep during the year.

12. The number of trees of all classes on the canal at beginning of the year was 9,714 and that at its end was 9,681.

The principal varieties are bābul 4,059, karanj 3,105, mango 635, nimb 537, jambhūl 286, and sandal 200. The net revenue from plantation was Rs. 78.

(30).—MUCHKUNDI TANK.

The rain-fall of the year, compared with that of the previous year, was :—

			1892-93.	1893-94.
			Inches.	Inches.
Kharif	...	...	22·81	10·68
Rabi	...	...	11·40	10·88
Total	...	...	34·21	21·56

The average for the past eight years was 23·73.

2. The area irrigated during the year, as compared with the preceding years, was :—

			Kharif.	Rabi.	Total.
			Acres.	Acres.	Acres.
1891-92	...	...	6	199	205
1892-93	...	...	3	...	3
1893-94	...	...	10	2	12

increase on the preceding year. In the year 1892-93, on account of very seasonable rain-fall, a small area was irrigated. The increase of the area of irrigation for 1893-94, as compared with the figures for 1892-93, is due to the smaller rain-fall.

3. The assessed crop revenue during the year under report was only Rs. 60, and the revenue from other sources (sale of grass and trees in the tank bed) realized Rs. 364, bringing the gross revenue of the year to Rs. 424, as compared with Rs. 40 for the preceding year. The working expenses during the year amounted to Rs. 387.

4. On the 1st April 1893, the water in the tank stood at 13·08 above the sill of sluice, or 14·46 feet higher than at the corresponding period of the previous year, the large replenishment of the previous year not having been fully

58 (31).—NILGUND TANK; (32).—GADIKERI TANK; (33).—DÁMBAL TANK.

utilized. The tank continued to fall till the 4th June when it received its first appreciable replenishment.

The principal replenishment occurred from October 11th to October 16th.

The replenishment from 11th to 16th October amounted to 148·381 millions of cubic feet, the highest replenishment occurring on the 12th as shown by the gauge on the 13th and which amounted to 51·385 millions cubic feet. Further replenishments occurred on the 14th November and 15th November, bringing the water level up to R. L. 1803·49 or 17·55 feet above the sill of sluice. This is the greatest height to which the tank has yet filled. The contents above sill of sluice then amounted to 375 millions cubic feet as compared with 367 millions of the previous year.

(31).—NILGUND TANK.

No expenditure was incurred on this work during the year under report.

The present state of this tank has been described in the printed Irrigation Revenue Report for the year 1892-93. The cutting down of waste weir of the tank with a view to lowering the full supply level thereof having not had the desired effect, it has been decided, under the sanction of Government, to leave the sluices open in future. The result of this measure will be watched and reported hereafter.

(32).—GADIKERI TANK.

The management of the tank is under the control of the Revenue Department.

2. The area irrigated by the tank was 337 acres and the irrigation share of the consolidated revenue collected in the Civil Department amounted to Rs. 1,987.

(33).—DÁMBAL TANK.

The rain-fall of the year (during kharif 18·72 and rabi 6·65) was 20·37 inches against that of the previous year 18·44, and the average of the previous 10 years 20·45.

2. At the commencement of the year the water level in the tank stood at R. L. 140·61, *i. e.* 15·61 feet above the outlet sluices and 6·61 feet above the bed of the tank; it then continuously fell until 3rd June when replenishments commenced and the tank overflowed at R. L. 145·30 for the first time on the 10th June, and again on the 16th November. The water level then gradually fell and at the close of the year was 15 feet above the outlet sill and 6 feet above the tank bed.

3. The area irrigated, the assessments, working expenses and average water-rate as compared with the two previous years were :—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1891-92 ...	17	17	146	308	163	325	1·99	612
1892-93 ...	261	272	54	115	315	387	1·23	571
1893-94 ...	110	629	17	50	127	679	5·35	560

It will be seen from the above table that there was a decrease of 198 acres irrigated as compared with the previous year due to timely rainfall.

4. Although there was a decrease in area irrigated, yet the revenue increased by Rs. 292 as compared with that of the previous year, owing to the sufficiency of the water in the tank which induced the cultivators to irrigate the higher rated crops.

5. In addition to the above, 97 acres were irrigated under consolidated rates.

6. The water-rate assessment amounted to Rs. 679 under new irrigation or crop rates, and Rs. 666 under old irrigation paying consolidated rates, making a total of Rs. 1,345 and giving an incidence of Rs. 5.35 and Rs. 6.86 per acre for new and old irrigation respectively.

7. In addition to the above revenue Rs. 62 were realized on account of sale of grass, trees, &c., in this department and Rs. 255 in the Revenue Department on account of plantation and other canal produce, making a total under this head of Rs. 317.

8. The total direct and indirect working expenses amounted to Rs. 560, which includes Rs. 55 on account of land compensation. Deducting this sum from Rs. 1,662, the amount of total revenue leaves a net profit of Rs. 1,102, equal to 1.81 per cent. on the direct capital outlay of Rs. 60,844.

9. The average water duty per cubic foot per second was during the kharif season 113 acres and during the rabi season 32 acres.

(34).—MEDLERI TANK.

The rainfall of the year (during kharif and rabi seasons) was 14.98 inches as compared with 11.56 of the previous year, or with 21.69, the average of previous 10 years.

2. The water in the tank was on the 1st April at R. L. 172.10, i. e. 7.10 above the outlet sill; replenishment commenced on 16th May, but the water did not overflow (R. L. 180.00) until 18th November 1893. At the close of the year it was at R. L. 173.57, i. e. 8.57 feet above outlet, or 1.41 higher than on the corresponding date of the previous year.

3. The area irrigated, water-rate assessments, working expenses and average water-rate as compared with the two previous years were :—

Years.	Kharif.		Rabi.		Total.		Average. Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1891-92	50	312	53	178	103	490	4.76	613
1892-93	76	269	19	68	95	337	3.55	600
1893-94	75	283	21	127	96	410	4.27	527

The above total shows an increase of 1 acre as compared with the previous year.

4. The amount of water-rates was Rs. 410 against Rs. 337 of the previous year, being an increase of Rs. 73, showing that higher rated crops were cultivated. In addition to the above Rs. 2 were collected on account of sale of grass, &c.

5. The working expenses (direct and indirect) amounted to Rs. 527 against Rs. 600 during the previous year, being Rs. 115 in excess of the total revenue derived from the tank.

6. The average duty of water per cubic foot per second was 238 and 216 acres during kharif and rabi seasons respectively.

(35).—MADAG TANK.

The rain-fall of the year during kharif and rabi seasons was 25·31 inches against 20·05 inches of the previous year and an average of 29·01 for the previous 10 years.

2. The area irrigated, the water assessments, the working expenses and water-rate as compared with the two previous years were:—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1891-92	652	1,746	377	1,011	1,029	2,757	2·68	1,203
1892-93	359	1,081	382	1,134	741	2,215	2·99	1,050
1893-94	318	796	374	1,096	692	1,892	2·73	920

The above total shows a decrease of 49 acres on that of the previous year.

3. The water-rates assessments amounted to Rs. 1,892 against Rs. 2,215 of the previous year, or a decrease of Rs. 323, principally due to a sufficient and timely rainfall in the kharif season; the rayats were able to cultivate monsoon crops without the assistance of the canal water.

Including Rs. 269 on account of canal produce the total revenue for the year amounted to Rs. 2,161.

4. The total number of trees on the canals is 3,056, consisting chiefly of mango, babul, nimb, sandal and tamarind.

5. The working expenses, direct and indirect, amounted to Rs. 920; the operations of the year thus show a net profit of Rs. 1,241, equal to about 77 per cent. on the direct capital outlay of Rs. 1,61,248.

6. The average water duty per cubic foot per second was during the kharif season 85 acres and during the rabi season 44 acres.

(36).—ASUNDI TANK.

The rain-fall gauged at this tank site during the kharif and rabi seasons was 23·51 inches against 17·16 inches registered during the previous year. The average rain-fall for the previous 10 years is 24·79 inches.

2. The tank became dry on 4th December 1892 and remained so until 19th April 1893 when replenishments commenced, and the highest level attained R. L. 106·28, i. e. 9·28 feet above outlet sill and 0·72 feet below crest of weir was reached on 16th November 1893. The water level on the 31st March 1894 was 5·58 above sill of outlet.

3. The area irrigated, water-rate assessments, working expenses and average water-rate as compared with the two previous years were:—

Years.	Kharif.		Rabi.		Total.		Average Water-rate.	Working Expenses.
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.		Rs.
1891-92.	63	184	69	215	132	399	3·02	672
1892-93.	46	196	18	120	64	316	4·19	1,162
1893-94.	60	175	25	116	85	291	3·42	791

The above table shows an increase of 21 acres over the previous year.

4. The area irrigated under the consolidated assessment was 124 acres in addition to that detailed in the above table, giving a revenue of Rs. 472.

(37).—MOVINKOP TANK; (38).—GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS. 61

5. The water-rate assessment under crop rate was Rs. 291 and that under old irrigation on consolidated rates, Rs. 472, together amounting to Rs. 763; adding to this Rs. 64 on account of sale of grass, trees, &c., by this department, the total revenue received from this tank during the year was Rs. 827.

6. The average water-rate per acre under new irrigation was 3.42 and that for old Rs. 3-8-0.

7. The total working expenses, including Rs. 138 and Rs. 50 respectively spent on special repairs and making drainage channel, &c. (unfinished works from the previous year), amounted to Rs. 791, leaving a small net profit of the operations of the year amounting to Rs. 36.

8. The average water duty per cubic foot per second was during kharif season 111 acres and during rabi season 124 acres.

(37).—MAVINKOP TANK.

This tank is under the control of the Revenue authorities. The area irrigated, all kharif, was 492 acres and the net consolidated revenue was Rs. 1,265; an additional area of 50 acres with assessment of Rs. 126 was brought under irrigation during the year under report.

(39).—GOKAK CANAL, 1ST SECTION, AND STORAGE WORKS.

The expenditure up to date has been Rs. 11,76,481 against the estimated amount of Rs. 12,27,669. The expenditure during the year was principally on account of land compensation, the estimated provision for which has been considerably exceeded as was anticipated in the last year's report, and a revised estimate for this item of expenditure was since sanctioned.

2. The area irrigated during hot weather was 43 acres against 204 acres of the previous year. No applications for perennial crops were refused.

3. The monsoon rain was very early and the level of water in the tank began to rise from 10th May 1893.

4. The rain-fall gauged at the head of the canal compared with the previous year was as follows:—

Year.	Rain-fall.
1892-93	31.68
1893-94	31.76

5. The areas irrigated compare as follow with those of previous year:—

Year.	Kharif.	Rabi.	Total.
	Acres.	Acres.	Acres.
1892-93	2,821	1,027	3,848
1893-94	3,014	1,223	4,237

The increase is probably due to the benefits from irrigation being better appreciated.

The area applied for was:—

				Acres.
1892-93	...	...	...	3,985
1893-94	...	...	...	3,937

6. The assessments were :—

Year.	Kharif.	Rabi.	Total.
1892-93	7,139	2,218	9,357
1893-94	8,509	3,120	11,629

The increase in the assessment of kharif was due to the larger area irrigated.

7. The area actually irrigated (4,237 acres) amounted to 25 per cent. of the entire amount under command (16,663 acres) of the canal so far as now constructed.

8. In addition to the water-rates, Rs. 196 were realized for canal produce.

9. The continuous supply of 47 cubic feet per second was given to the mills and the revenue derived from it was Rs. 14,760. The increase of Rs. 4,920 over the amount of the previous year is due to the payment in advance of the instalment becoming due on 30th June 1894.

10. The total assessed revenue from all sources was :—

	Rs.
Water-rates	11,629
Miscellaneous canal produce	196
Mill's revenue	14,760
Total	26,585

11. The working expenses were :—

	Rs.
1892-93	5,718
1893-94	6,052
	+ 334

The increase is due to the share of collection charges in the Civil Department. These charges compare as under with the previous year :—

	Rs.
1892-93	867
1893-94	1,522
	655
Deduct—Savings on other items	321
Difference as above	334

12. The area irrigated was measured by a special establishment consisting of one measurer and the required number of khalasis. The measurer, in addition to his own measuring duties, inspects the canal and checks the work of the patkaris and therefore, only $\frac{2}{3}$ of his salary is charged to the measuring establishment.

13. The following table gives the details of the working expenses :—

Name of Work.	Average incidence of Water-rate per Acre.	COST OF MEASUREMENT.		WORKING EXPENSES TOTAL IN THE PUBLIC WORKS DEPARTMENT.	
		Total Cost.	Per Acre.	Per mile of Main Canal.	Per Acre irrigated.
Gokak Canal, 1st Section, and Storage Works	2.74	Rs. 772	Rs. a. p. 0 2 10	Rs. 1,641	1.01

14. The average discharge of canal was, for—

Khariif	...	...	15.16	cubic feet per second.
Rabi...	...	...	20.67	do.

and the duty of water obtained was, for—

Khariif	...	...	198	acres per cubic foot per second.
Rabi	...	...	112	do. do.

15. The maximum flood occurred on 21st June 1893 and rose 2.20 feet above the level of the present weir crest.

16. The under-sluices were opened on 2nd July 1893 and closed on 23rd October 1893.

17. A project for extension of Gokak Canal, 1st Section, up to ridge point beyond Malapur Nalla has been submitted and is awaiting sanction.

18. The average water-rate per acre irrigated compares as under with the previous year, and the slight increase is due to the increased water-rates brought into force during the year :—

1892-93	...	...	...	2.43
1893-94	...	...	...	2.74

19. Around the edge of the water of the storage tank water was taken for 56 acres against 66 of the previous year.

20. The existing trees were maintained and are in number 7,089 :—

Above 6 feet	...	...	3,224
Within 6 feet and above 2 feet	...	...	3,865

21. The rainfall of the year though not abundant was favourable and timely, and although the water-rates have been enhanced the canal revenue shows progress. There was a falling off in perennial crops which was to be expected, but it is hoped that improvement will take place in the next year.

PART II.

WORKS IN OPERATION FOR WHICH ONLY REVENUE
ACCOUNTS ARE KEPT.

1. The following table shows the areas irrigated in the different districts in the Deccan and Gujarāt and the consolidated revenue assessed during the year :—

Collectorates.	Number of Works.	Area irrigated.	REVENUE.			REMARKS.
			Irrigation Share.	Land Share.	Total.	
1	2	3	4	5	6	7
		Acres.	Rs.	Rs.	Rs. *	
Ahmedabad ...	66	10,825	21,867	29,195	51,062	
Kaira ...	2	7,992	27,916	11,361	39,277	
Surat ...	290	12,365	49,391	1,17,154	1,66,545	
Broach ...	28	888	2,818	4,684	7,502	
Khāndesh ...	82	9,131	58,725	12,610	71,335	
Nāsik ...	80	10,514	80,517	11,759	92,276	In charge of the Khāndesh irrigation District.
Ahmednagar ...	191	17,817	80,804	26,002	1,06,806	
Poona ...	2	147	353	132	485	
Sátara ...	3	515	2,857	1,015	3,872	
Sátara ...	1	160	623	415	1,038	
Belgaum ...	67	9,910	32,832	8,202	41,034	
Dhārwar ...	471	64,641	1,71,074	42,765	2,13,839	
Bijāpur ...	15	1,443	5,897	1,467	7,364	
Ratnāgiri ...	3	1,105	4,988	374	5,362	
Total ...	1,301	1,47,393	5,40,662	2,67,135	*8,07,797	*Net consolidated assessment for Revenue year 1893-94.

2. The following table shows the actual expenditure and receipts for the year 1893-94 on all the irrigation works in the Deccan and Gujarāt for which only Revenue Accounts are kept :—

Collectorate.	EXPENDITURE.								ACTUAL RECEIPTS.						Refunds of Revenue.	Gross Receipts less Refunds.
	Direct Charges.						Indirect Charges. Share of Collection Charges.*	Direct Receipts.			Indirect Receipts. Share of Consolidated Revenue.	Grand Total Direct and Indirect Receipts.				
	Extensions and Improvements.	Maintenance and Repairs.	Establishment.		Tools and Plant.	Total Direct Charges.		Grand Total.	Water Rates from Irrigation.	Miscellaneous.			Total Direct Receipts.			
			Direction.	Executive.												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.	
Ahmedabad	3,604	4,552	802	5,696	123	21,919	2,187	26,808	6	1,475	1,421	21,867	21,867	---	21,967	
Kaira	4,333	3,419	---	---	---	---	2,792	---	---	---	---	27,916	29,397	---	29,397	
Surat	6,988	8,035	---	---	---	---	4,971	30,811	---	327	327	49,391	49,718	---	49,718	
Broach	1,893	3,059	1,030	4,180	299	25,558	282	---	---	---	---	2,818	2,818	---	2,818	
Nasik	4,344	597	997	20,181	153	26,272	8,088	34,300	73	4	78	80,504	80,882	---	80,882	
Khindesh	8,072	2,635	---	---	---	---	8,142	72,997	899	468	1,302	80,517	81,879	---	81,879	
Ahmednagar	7,778	1,076	3,936	34,544	946	58,983	5,872	72,997	---	---	---	69,725	69,725	---	69,725	
Poona	42	---	---	6,497	---	6,497	35	6,432	---	1	---	353	354	---	354	
Satara	---	---	---	---	---	---	115	354	681	---	681	2,867	8,339	---	8,339	
Belgaum	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Dharwar	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Bijapur	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Ratnagiri	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Total	50,917	57,346	9,250	1,06,575	2,065	2,36,133	64,418	2,90,571	2,966	3,303	5,671	5,40,662	5,46,333	---	5,46,333	

* Expenditure and revenue on account of the works in charge of the Khāndesh Irrigation District.

† Represents charges in the Civil Department not adjusted in the Finance Accounts.

3. The total amount of revenue realized from and the working expenses of this class of works during the past three years were as follows :—

	1891-92.	1892-93.	1893-94.
	Rs.	Rs.	Rs.
Revenue realized	5,27,967	5,44,910	5,46,333
Working Expenses	1,69,648	1,97,976	2,80,571
Net Revenue	3,58,319	3,46,934	2,65,762
Percentage of Working Expenses to Revenue	32.13	36.33	51.35

4. The expenditure from contributions and Patphala funds on all irrigation works for which only revenue accounts are kept for the year 1893-94 is as shown in the table below :—

Collectorate.	EXPENDITURE.			REMARKS.
	Contributions.	Pátphála Fund.	Total.	
	Rs.	Rs.	Rs.	
Ahmedabad	1,112	...	1,112	
Kaira	...	...	...	
Surat	2,691	...	2,691	
Broach	1,295	...	1,295	
Násik	1,076	1,189	2,265	
Khándesh	24	333	357	
Ahmednagar	...	...	...	
Poona	...	...	...	
Sátára	...	...	...	
Belgaum	692	...	692	
Dhárwar	2,558	...	2,558	
Bijápúr	...	...	...	
Ratnágiri	...	...	...	
Total	4,448	1,522	10,970*	

* "Accounted for in the Finance Accounts under "Works for which neither Capital nor Revenue Accounts are kept,"

AHMEDABAD DISTRICT.

5. The only new work carried out during the year under report was the improvement and extension of the Nalka Channel Khári Irrigation Sluices. estimated to cost Rs. 16,274 and sanctioned in Government Resolution No. 24 A.—335 of 20th February 1891, on which an expenditure of Rs. 4,576 was incurred.

6. The receipts for the year 1893-94 amounted to Rs. 48,816, and were derived from the following sources :—

	Acres.	Assessment.
		Rs.
I.—Irrigation above the Kalambandi villages	1,103	5,738
II.—Irrigation from tanks fed by the river Khári	249	1,942
III.—Irrigation from Khári Sluices proper	8,284	41,055
IV.—Irrigation below the Kalambandi villages	20	81
Total	9,656	48,816

The area irrigated was 172 acres more than that during the preceding year. The slight increase in area irrigated above the Kalambandi Villages and from Khári Sluices proper was due to increase in the number of lifts used to raise water from the river for winter crops.

7. The mean rate of assessment was Rs. 5.20 on lands for which water was taken by lift above the Kalambandi villages; Rs. 7.80 for lands irrigated by the tanks fed from the river Khári; and Rs. 4.05 for lands irrigated below the Kalambandi villages from the Khári river. On lands under the Khári Sluices proper, i.e., Kalambandi villages, the rates are consolidated, the average share per acre for land and water being as under :—

	Land share.			Water share.			Total.		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
Government Land	1	14	6	5	1	6	7	0	0
Alienated Land	2	1	6	5	5	9	7	7	3
Inámi Land, Consolidated ... ..	.....			.....			7	1	4
Assessment, Jiráyat Land ... ..	.....			2	8	0	2	8	0

8. The working expenses during the year, exclusive of charges of revenue collection, amounted to Rs. 1,258.

9. The old works in this district were fully described in the last report, and there is nothing to add thereto.

10. During the year 12 tanks were repaired at a total cost of Rs. 9,394, of which Rs. 5,202 were spent on repairs, and Rs. 4,192 on improvements, including Rs. 1,112 contributed by the villagers concerned.

SURAT AND BROACH DISTRICT.

11. During the year under report 38 tanks were repaired at a total cost of Rs. 23,917, of which Rs. 13,620 were spent on repairs, and Rs. 10,297 on improvements. Of the above a sum of Rs. 2,310 was contributed by the villagers interested in the irrigation of lands under the different tanks, and Rs. 750 by the District Local Boards in aid of water-supply privileges.

12. Of the above 38 tanks, 5 belong to the Broach District, the total cost of repairs and improvements carried out to which amounted to Rs. 6,338.

13. A sum of Rs. 85 was expended in surveying tanks for preparation of estimates for repairs and improvements.

14. The total area irrigated and the consolidated revenue assessed on irrigation tanks in the Surat and Broach Districts, as reported in Canal Return No. VIII, by the Collectors is as under :—

District.		Area.	Net consolidated Assessment.	Irrigation share.	Land share.
		Acres.	Rs.	Rs.	Rs.
Surat	12,365	1,66,545	49,391	1,17,154	
Broach	935	7,502	2,818	4,684	

15. The management of irrigation tanks rests with the Revenue Department, and hence no separate establishment is entertained on this account. The receipts are also realized by the Revenue authorities.

NÁSİK DISTRICT.

16. There are in the Násik District, 191 bandhárás yielding a revenue (irrigation share alone) of Rs. 80,804 and irrigating 17,818 acres of permanent bágáyat.

17. The expenditure on works for the last ten years has been as follows :—

Year.	Amount.
	Rs.
1884-85	6,062
1885-86	14,097
1886-87	6,487
1887-88	6,567
1888-89	7,847
1889-90	5,185
1890-91	2,707
1891-92	5,335
1892-93	3,812
1893-94	5,680
	63,779
Average	6,378

18. The cost of the actual establishment engaged on the works for the year under review is Rs. 3,118, making the total expenditure, including all establishment, Rs. 10,590 on works, or 13.10 per cent. of the revenue, but the establishment charges as they appear in the accounts are regulated by the rules in force under which, this being an Imperial Irrigation District, the balance of charges after the fixed percentages have been calculated are debited to II class revenue works.

19. The general features of these works have been described in previous Revenue Reports. They are physically very similar to those of Khándesh Second Class Irrigation, but important differences, regarding the way in which the original settlement was effected, appear to exist. For instance, the jiráyat is mixed up on the ground with the bágáyat. A field of 10 acres, as an example, the whole of which is under command of the channel, might have only 3 acres classed as bágáyat, and the remaining 7 acres as jiráyat. The 3 acres of bágáyat are not demarcated on the ground in any way and the classification does not appear to depend on the nature of the soil. It is supposed that when the settlement of such fields was made, the owner declared his inability to irrigate more than a certain part of his field, and he was assessed accordingly. The consequence of this having been permitted is that instead of the almost perfect system of the old Khandesh Province, where crops are cultivated in blocks at a great saving of labour and of water, we have in Násik patches of different crops scattered about all over the irrigable lands; and what is worse, there exists possibly a large proportion of unauthorized irrigation, as the man who originally said he could not irrigate more than 3 acres in his field of ten, will not refrain from irrigating the whole ten, when he wants to do so. How far such irrigation entirely escapes assessment, is not known, but the canal returns at all events show no revenue derived therefrom. Enquiries directed to a different object, viz. that of ascertaining the actual irrigating capacity of certain streams, have brought this matter to light in this Department, and now that the attention of the Revenue authorities has been drawn to it, no doubt it will receive attention. It is referred to here as a striking instance of the difference in practice in affairs relating to old irrigation works and the importance of a thorough understanding of such local differences before any wise legislation can be framed for dealing with the vexed questions regarding maintenance and the rights and duties of the villagers and the village officers on the second class works.

20. The work carried out during the year comprises repairs and improvements to 14 bandhárás and channels, and the construction of a new bandhára

not yet completed at Borala, taluka Chándor. None of these works are in themselves important enough to require detailed description here. The expenditure on them was as follows:—

No.	Names of Works,	AMOUNT.		REMARKS.
		Estimated.	Expended.	
	REPAIRS.	Rs.	Rs.	
	TA'LUKA NA'SIK.			
1	Repairs to bandhára village nála at Madsangwi.	172	171	Completed.
	TA'LUKA NIPHA'D.			
2	Repairing breaches in channels from Ract-pir bandhára.	38	35	Completed.
3	Repairs to Páchora (Wani) bandhára ...	98	98	Do.
		7	7	
	TA'LUKA DINDORI.			
4	Repairs to bandhára New Hegdia at Tisgaon.	42	41	Completed.
5	Maintenance and repairs, old Wadali Canal.	95	94	Do.
6	Surveys for bandhára repairs in the Godávari Basin, Násik Collectorate.	222	157	Do.
	Total, Repairs ...	674	603	
	IMPROVEMENTS.			
	TA'LUKA NA'SIK.			
1	Hirawádi bandhára ...	152	147	Completed.
2	Bhagur Road bandhára at Adgaon ...	348	325	Do.
		86	86	
3	Khánderkar's bandhára at Adgaon ...	341	341	Do.
		113	113	
4	Wadácha bandhára and channel at Adgaon.	347	332	Do.
		115	115	
5	Improvements to bandhára, village nála at Madsangwi.	60	60	Do.
	TA'LUKA NIPHA'D.			
6	Páchora (Wani) bandhára ...	460	456	Completed.
		33	33	
	TA'LUKA DINDORI.			
7	New Hegdia bandhára at Tisgaon ...	381	375	Completed.
		40	40	
	TA'LUKA CHÁNDOR.			
8	Constructing a new Gulkhádi nála bandhára at Borala.	1,731	1,219	In progress.
		225	225	
	TA'LUKA SINNAR.			
9	Datli bandhára and irrigation channel ...	1,000	999	In progress.
		120	120	
10	Surveys for bandhára extension and improvements in the Godávari basin, Násik Collectorate.	102	90	Completed.
	Total Improvements ...	5,654	5,076	
	Total, Repairs and Improvements ...	6,328	5,679	

21. Out of Rs. 6,328 the estimated cost of repairs and improvements in progress during the year, it is interesting to note that Rs. 739 or 12 per cent. were contributed by the villagers themselves.

22. The following statement shows the areas assessed as irrigated and the consolidated revenue assessed on second class revenue works during the year:—

1893-94.

Taluka.	Area irrigated.	REVENUE		
		Irrigation Share.	Land Share.	Total.
	Acres.	Rs.	Rs.	Rs.
<i>Nasik Collectorate.</i>				
Násik Taluka	2,757	8,585	4,258	12,843
Sinnar do.	4,457	21,988	6,470	28,458
Dindori do.	3,054	15,622	4,607	20,229
Niphád do.	4,562	21,056	7,177	28,233
Chándor do.	2,812	13,126	3,413	16,539
Yeola do.	176	427	77	504
	17,818	80,804	26,002	1,06,806

• KHÁNDESH IRRIGATION-DISTRICT.

23. The following table gives a summary of the area irrigated and the revenue derived from old irrigation works:—

Description.	Khándesh.	Násik.	Total.
	Acres.	Acres.	Acres.
Area irrigated at consolidated rates ...	9,131	10,514	19,645
Area irrigated at separate water-rates ...	.....	383	383
Total ...	9,131	10,897	20,028
	Rs.	Rs.	Rs.
Consolidated revenue	71,335	92,276	1,63,611
Irrigation share of consolidated revenue ...	58,725	80,517	1,39,242
Separate water-rates ... ..	.....	899	899
Total ...	58,725	81,416	1,40,141

The above figures are exclusive of the areas under the old channels which are now included in the Lower Pánjhra River system.

24. The year's operations in maintenance and improvements of these works have been given in detail in the Administration Report for the year.

The expenditure during the year amounted to Rs. 58,983 as under:—

	Rs.
Improvements	15,846
Repairs	3,711
Establishment	38,480
Tools and plant	946
Total	58,983

against Rs. 50,850 in the previous year. The increase has been chiefly under the head of 'Improvements' which were carried out in the interest of preservation of revenue.

25. Besides the above expenditure from Imperial funds the sum of Rs. 1,522 was spent on the works from the Pátphála fund in the execution of small improvement works asked for by the contributors to the fund.

26. The net revenue earned from the old irrigation works, after deducting the working expenses of Rs. 58,983 shown in paragraph 2 above, amounted to Rs. 81,158.

27. The unrealized balance of revenue from the works improved by the State amounted to Rs. 715. The attention of the Revenue Department has been called to this large outstanding and it is expected that the same will be realized during 1894-95.

28. The following table compares the year's establishment charges on these works as given in para. 2 above, with those of the previous year :—

Details.	1892-93.	1893-94.
Construction	34,944	34,544
Direction and accounts	2,749	3,936
Total	37,693	38,480

In the construction establishment, there has been a small decrease, notwithstanding a larger outlay on the improvements and repairs carried out during the year. This shows that efforts are being made to keep down the charges on establishment in this district. The improvements and repairs of these 2nd class works of ancient construction require considerable professional skill, and so their survey and designs must be entrusted to trained subordinates working under the orders of the Executive Engineer. Further reduction of these establishment charges to any large extent is not, therefore, feasible. The establishment debitable to 2nd class works in this district represents the charge for the whole establishment in the district after debiting to the new works such share of it as is debitable to them according to the rules laid down in Government Resolution No. 172 A-I.—454 of 15th September 1879.

AHMEDNAGAR DISTRICT.

29. The only two works of this class are situated in the Akola Taluka :—

1. Sávargaon Bandhára.
2. Gardani do.

30. The following table shows the area irrigated and the consolidated revenue assessed during the year :—

Name of Bandhára.	Area irrigated.	REVENUE.		
		Irrigation share.	Land Share.	Total.
	Acres.	Rs.	Rs.	Rs.
Sávargaon	76	200	61	261
Gardani	71	153	71	224
Total	147	353	132	485

POONA DISTRICT.

31. The following are the works in this collectorate for which only Revenue Accounts are kept :—

- | | |
|------------------|-----------------------|
| 1. Dam at Kasur. | 4. Dam at Narayegaon. |
| 2. Dam at Wadaz. | 5. Dam at Patas. |
| 3. Dam at Agur. | 6. Tanks at Wadhana. |

The description of these works was given in the Revenue Report, 1881-82.

32. No expenditure was incurred on these works for maintenance and repairs during the year 1893-94, except Rs. 4 for survey of Narayangaon Bandhára.

33. Rs. 42 in all or Rs. 14 on each were expended during this year for gauging the heights of water in Wadhana, Supa and new Patu Tanks.

BELGAUM DISTRICT.

34. The following tanks were repaired and improved during the year, the work having been put in hand during the previous year :—

Number.	Name of Tank.	Village.	EXPENDITURE TO COMPLETION.		Total.
			Repairs.	Improvements.	
			Rs.	Rs.	Rs.
1	Dodkeri ...	Ambadgati ...	3,894	1,101	4,995
7	Herekeri ...	Bechinkeri ...	4,086	390	4,476
11	Hoskeri ...	Deversigihalli ...	1,479	868	2,347
13	Wadankeri ...	Do. ...	1,634	1,143	2,777
10	Komarkeri ...	Basurkod ...	2,099	357	2,456

Plans and estimates have been prepared and approved for repairs to the Tank No. 18 on the list at Margankop. When the contribution is received from the villagers, the work will be put in hand.

DHÁRWÁR DISTRICT.

35. The total number of tanks of this class in the Dhárwár District is 3,320 of which 471 irrigate over 50 acres.

36. During the year under report 46 of the larger tanks irrigating over 50 acres were repaired and improved at a cost of Rs. 30,458 towards which a sum of Rs. 2,558 was contributed by the rayats interested. 91 of the smaller tanks irrigating less than 50 acres were also repaired during the year at a cost of Rs. 8,068.

37. The following table shows the area irrigated under the larger tanks, *i. e.*, those irrigating over 50 acres and the revenue derived therefrom :—

Number of Tanks.	Area irrigated.	REVENUE.		
		Irrigation Share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
471	64,641	1,71,074	42,765	2,13,839

In addition to the above the following direct receipts have been realized during the year :—

	Rs.
From direct water-rates ...	641
Miscellaneous sources ...	1,024
Total ...	1,665

No portion of the revenue from land irrigated under the smaller tanks has been credited to the Public Works Department.

BIJAPUR DISTRICT.

38. There were 17 old irrigation works in the district, as briefly described at pages 69 and 70 of the printed Irrigation Revenue Report of the Bombay Presidency, excluding Sind, for 1891-92.

During the year under report, a revised list of tanks has been approved of and published, according to which, there are now only 15 works in charge of this Department, No. 14, Hippargi well and No. 17 Inchigeri Tank (old list), having for certain reasons been omitted therefrom.

39. To some of the tanks, improvements and repairs as detailed below were executed during the year under report :—

Names of Tanks.	Repairs.	Improvements.
Nandikeshwar tank	54	...
Banshankeri Houd at Tolachgud ...	5	...
Hirekeri and Ganjikeri Tanks at Párvati ...	37	...
Dhodkeri and Sankeri Tanks at Timsagar ...	81	...
Saraswati Nála Tank at Tolachgud ...	94	...
Special repairs to Ganjikeri Tank ...	415	...
Kendur Tank	52	...
Tank at Kumatgi	40	...
Do. Mamdapur (large)	80	...
Do. do. (small)	70	...
Iron sluice to the Hirekeri (Párvati) Tank ...	...	208
Dhodkeri Tank at Timsagar	...	181
Sankeri do. do.	...	125
Total ...	928	514

RATNÁGIRI DISTRICT.

40. Annual ordinary repairs aggregating Rs. 160 to two, viz., the Warad and Pat, out of the 4 irrigation tanks in this district were carried out during the year.

41. The complete statistical list of tanks in this district referred to in last year's report is expected to be ready for publication in 1894-95.

AGRICULTURAL WORKS.

42. The following table shows the financial results of the several drainage channels constructed in the Broach Collectorate :—

Names of Channels.	Expenditure during the year.	Total cost up to date.	Receipts from sale of occupancy rights.	Balance against Capital.	Area assessed under Settlement.	Land taken up for cultivation.	Assessment of land taken up for cultivation.	Irrigation share.	Percentage of Revenue on Capital.
<i>Jambusar Táluka.</i>	Rs.	Rs.	Rs.	Rs.	Acres.	Acres.	Rs.	Rs.	Rs.
Kora-Madafar Channel including Janiram Branch ...	...	16,003	2,376	13,627	2,750	1,467	5,255	...	30.50
Amasapur-Nadidá Channel ...	...	14,302	2,704	12,198	960	743	3,093	...	25.35
<i>Vágra Táluka.</i>									
Samadpor-Kadodra-Paniádra Channel ...	...	7,172	3,800	5,272	495	477	1,006	...	30.74
Pakhajau-Ambhel Channel ...	7,385	7,424	699	6,725	1,285	160	404	...	6.00
	7,385	44,901	8,979	33,822	5,460	2,862	9,761	...	27.25
<i>Ankleswar Táluka.</i>									
Adol-Hajat-Piludra Channel ...	3,144	12,289	...	...	164	...	...	...	...

* Includes Rs. 89 expended in 1892-93.

43. The amounts realized from sales of occupancy right during the year 1893-94 were as follows :—

	Rs.
1. Kora-Madafar Channel including Jantram Branch	... 13
2. Amanpur-Nadiad Channel	... 5
3. Pakhajan-Ambhel Channel	.. 699
Total	... 717

44. *The Adol-Majat-Filudra Channel* was completed during the year at a cost of Rs. 12,289. No land drained by this channel has yet been taken, but it is hoped that some of it will be tilled during next year.

45. *The Pakhajan-Ambhel Channel* was taken in hand in this year and though only partially carried out at a cost of Rs. 7,424, it has already given an out-turn of 6 per cent. on the outlay. When the channel is completed the return is expected greatly to exceed this percentage.

46. The revenue amounts to 27.25 on the capital.

47. Current repairs costing Rs. 41 were executed during the year to the dam at Borvi in the Kolaba Collectorate, which is classed in the category of Agricultural Works for which neither Capital nor Revenue Accounts are kept.

*Revenue Report of Irrigation Works in
the Bombay Presidency, excluding
Sind, for 1893-94—Review of the.*

• • No. 3 W. I.—82 of 1895.

Public Works Department.

Bombay Castle,
14th January 1895.

Memorandum from the Superintending Engineer, Southern Division, No. 3608, dated 15th September 1894.

Forwards the Irrigation Revenue Report, Parts I. and II., of works in the Southern Division for 1893-94, with the usual statements.

Letter from the Superintending Engineer, Northern Division, No. 4338, dated 21st September 1894.

Forwards similar report for works in the Northern Division.

Letter from the Chief Engineer, Central Division, No. 5186, dated 5th October 1894.

Forwards Part I. of the Irrigation Revenue Report of works in the Central Division for 1893-94.

Memorandum from the Superintending Engineer, Southern Division, No. 3808, dated 5th October 1894.

Requests that certain corrections may be made in the statements II. E. and H. accompanying the Revenue Report.

Memorandum from the Superintending Engineer, Southern Division, No. 3890, dated 11th October 1894.

Reports certain figures for insertion in statements I. A. and II. A.

Letter from the Examiner of Public Works Accounts, No. B.-3—1221, dated 11th October 1894.

Forwards statements and tables required in connection with the Irrigation Revenue Report of works in the Deccan and Gujarāt for 1893-94.

Letter from the Chief Engineer, Central Division, No. 5290, dated 12th October 1894.

Forwards Part II. of the Irrigation Revenue Report for 1893-94.

Memorandum from the Chief Engineer, Central Division, No. 5420, dated 17th October 1894.

Memorandum from the Chief Engineer, Central Division, No. 5714, dated 3rd November 1894.

Forwards statements I. A. and H. and the Revenue Reports of the Ojhar and Lākh Canals and the Bhātodi Tank for 1893-94.

Memorandum from the Chief Engineer, Central Division, No. 5871, dated 10th November 1894.

RESOLUTION.—The salient features of the year's operations are detailed in the general remarks embodied in the report.

2. The number of works in operation, for which Capital and Revenue Part I.—Number of works. Accounts are kept, is the same as in the previous year, *viz.*, 36.

3. The Capital expenditure amounted to Rs. 4,26,070, distributed as Capital outlay. follows:—

		Rs.	
Imperial	Major Works	{ Protective Works...	1,25,563
		{ Productive Works...	1,32,265
	Minor Works	... ..	33,560
Provincial	—Minor Works	... ..	1,34,682
			Rs. 4,26,070

The expenditure was almost equally distributed between Protective, Productive and Provincial Minor Works, being mainly incurred on the Nira, Mutha and Gokák Canals. On the Nira Canal, the work done was chiefly at Bhatghar. Some work was also carried out at Vir, and distributaries Nos. 59 and 35 A. were practically completed, adding 11,994 acres to the area under command, which now amounts to 183,862 acres. On the Mutha Canals, the expenditure was in connection with settling tanks and filter beds at Poona, while that on the Gokák Canal was for land compensation. The entire Capital outlay at the end of the year under all heads was Rs. 2,57,42,790, of which Rs. 1,82,50,408 was on Major Works.

4. The Interest charges on Productive and Protective Works to the end of the year were Rs. 1,14,81,515, and deducting the total net revenue realised, *viz.*, Rs. 17,14,993, the deficit at the end of 1893-94 amounted to Rs. 97,66,522.

5. The total length of main canals completed was nearly 602 miles, and of distributaries 601 miles. Some doubt has been raised as to the correctness of the figures for the Lakh Canal, but in the absence of satisfactory explanation the figures in the previous reports have been adopted. The enquiry already started by the Chief Engineer, Central Division, should be pursued, and correct figures entered in the next report. For the Hátthmati Canal also it is observed in statement I. A. that the length of distributaries completed is reported as 30 miles against the sanctioned length of 25 miles. This discrepancy requires explanation.

6. The irrigable area under command shows a decrease due merely to the alteration in the figures for the Nira Canal. It is stated that the figures now entered are correct, but it is not explained how the higher figures, hitherto shown, came to be entered. It is further stated that in statement I. A., the figures entered as the gross area under command are those for the whole project, including distributaries Nos. 60 and 61, if completed. Again in statement IV. E. the figures are said to refer to the areas commanded up to and inclusive of distributary No. 59, which is now complete. Further in statement I. A. under the Nira Canal, the "culturable area commanded" has been altered from 274,447 acres in the previous year's report to 227,670. It is also explained that in previous reports the "area irrigable by complete project" has been held to be the same as the "irrigable area commanded by complete project." These alterations and explanations afford ground for suspicion that the terms, as used in statements I. A., II. A. and IV. E. are not uniformly interpreted, and the orders of the Government of India should be requested for the guidance of the officers concerned. The reports explaining the discrepancies between the figures of gross and irrigable areas, as shown in the Annual Statement of Irrigation and Rainfall, and the Revenue Report, noticed in para. 10 of Government Resolution No. 110 W. I.—1892, dated 15th August 1894, will, when received, be dealt with separately. The net irrigable area was 583,897 acres, and thus shows an increase of 11,994 acres, which is solely on the Nira Canal, as remarked in para. 3 above.

7. The total area irrigated was 79,950 acres, as compared with 65,487 acres in the previous year. The increase of 14,463 acres is due to scanty and unseasonable rainfall. The average rainfall was 22.74 inches, as compared with 33.66 inches in 1892-93.

In reviewing the report for 1891-92 the Government of India remarked that the increase in the irrigated area was much smaller than might have been expected, and they further called for an explanation of the reasons why greater progress has not been achieved in extending the irrigated areas. A reply has now been sent, *vide* letter No. 134 W. I.—1888, dated 31st October 1894.

8. The principal crops irrigated were ground-nut (16,390 acres), sugarcane (13,063 acres), jowári (11,604 acres), and wheat (10,856 acres). All these crops, except wheat, show considerable increases over the areas of the previous year. The only other crop, which shows a noticeable increase, is rice, of which the area rose from 2,860 to 5,217 acres. The area of sugarcane on the Nira Canal rose from 1,639 to 3,436 acres. The considerable decrease under fodder (3,363 acres) was the result of a good harvest of jowári on the Nira Canal last year.

9. The assessed revenue amounted to Rs. 5,91,487 against Rs. 4,79,042 of the previous year. The assessments show an increase under all heads, except water-supply to towns, which is satisfactory. The decrease under water-supply to towns was due to the supply to the city of Poona being very much less than in the previous year. The average water-rate per acre was 5'37, as compared with 4'90 of the previous year.

10. The gross revenue realized from all sources, after deducting refunds (Rs. 3,521), was Rs. 5,73,746 against Rs. 5,45,542 of the previous year. The net revenue realized was Rs. 2,36,328, as compared with Rs. 2,37,764. The outstandings amounted to Rs. 33,277. The Mutha Canals show the largest balance, but the cause has been satisfactorily explained. The attention of the Superintending Engineers, Northern Division and Southern Division, should be drawn to the absence of any explanation of the large balances on the Khāri Cut and the Krishna Canal, and they should be requested to invariably account for heavy outstandings on works in their divisions.

11. The working expenses during the year amounted to Rs. 2,87,418, as compared with Rs. 3,07,778 of the previous year, showing a decrease of Rs. 20,360, which is satisfactory. The variations in figures for the several works are commented upon in para. 13 of the general remarks, and need not be alluded to here.

In February 1894, the Government of India referred for the consideration of this Government certain remarks by the Accountant General, Public Works Department, on the high average cost of maintenance and management per 1,000 acres irrigated, and the high average percentages of gross revenue spent in working expenses in the case of works in the Deccan and Gujarat. After a careful consideration of the points raised it has been explained to the Government of India that the peculiar circumstances of these works account for the high percentages referred to. The enquiries made in connection with the remarks of the Accountant General have elicited the fact that the principles on which charges for share of subordinate establishment employed on revenue management should be based are not everywhere understood, and it is believed that the high maintenance charges are in some cases partly due to this cause. Orders are being issued separately, directing the general adoption of a correct system, and it is hoped that the result will be some reduction in the charges. His Excellency the Governor in Council must, however, impress upon the Chief and Superintending Engineers the supreme importance of every endeavour being made to reduce these charges to a minimum.

12. The net revenue of the year, after deducting working expenses

Net revenue. was—

(a) on the basis of assessments ... Rs. 3,04,069,

(b) on the basis of realizations ... „ 2,86,328,

as compared with Rs. 1,71,264 and Rs. 2,37,764. There is an increase under both heads, which is satisfactory.

13. The financial results show an improvement under all heads, except
Financial results. Protective works.

14. Under Protective works both the Nira Canal and Mhaswad Tank show a falling off under net revenue of Rs. 11,272 and Rs. 8,296, respectively, the total for both being Rs. 18,449, against Rs. 38,017 of the previous year. In the case of the Nira Canal this result is due to less receipts and more working expenses. In the case of the Mhaswad Tank it is due almost wholly to heavy working expenses. The causes of the increased working expenses have been explained in the general remarks.

15. The Productive works show a profit of Rs. 2,19,618 against Rs. 1,81,115 of the previous year. The largest contribution towards the increase is from the Mutha Canals, but the Lower Panjhra River works and the Hathmati Canal also show increases of Rs. 5,695 and Rs. 4,078, respectively. Only the Krishna Canal shows a considerable decrease, which is solely due to less receipts.

16. The Imperial Minor Works show a profit of Rs. 23,667, against Rs. 6,875, which is an improvement. The question of handing over some of these works to the Revenue Department is receiving attention, and will be decided as early as practicable. The Provincial Minor Work (Gokak Canal) shows a net revenue (excluding interest charges) of Rs. 24,594 against Rs. 11,757 of 1892-93.

17. Under Works for which only Revenue Accounts are kept, the irrigated shows an increase of 1,206 acres, and gross revenue an increase of Rs. 1,423. The increased expenditure on Extensions and Improvements and Maintenance and Repairs is an indication of the attention paid to the old works which used to be described as deteriorating. The proceedings of the Committees appointed to report on tanks in the Northern and Southern Divisions are now before Government, and orders will be issued in due course. The question of increase in Establishment charges under old works was noticed last year, and it has been explained that the charges generally represent the balance left after charging fixed percentage rates on expenditure on first class works. The Chief Engineer, Central Division, has invited prominent attention to the system of debiting the Establishment charges to the second class works in the Ahmednagar and Nasik districts. He contends that it is erroneous to debit the balance of the total Establishment charges to this class of works when no such heavy establishment is either required for, or actually employed on them. In this connection it is sufficient at present to remark that the anomaly referred to is the result of the present classification of those districts, and the matter is under consideration.

18. In reviewing the report for 1892-93 the Government of India remarked, in para. 10 of their Resolution No. 56 I., dated 21st February 1894, that no information regarding crops was supplied for Minor Works for which only Revenue Accounts are kept. Accordingly opinion was called for as to the feasibility of furnishing this information. From the reports received, it now appears that the task of collecting the required information, though by no means impossible, could only be accomplished with great additional labour, and would be certain to delay the submission of the reports. The Government of India should therefore be informed that in these circumstances this Government does not recommend the incorporation of such information in the Revenue Reports.

19. Copies of the report and of this Resolution should, as usual, be forwarded to the Government of India and the Secretary of State.

G. O. W. DUNN,*
Under Secretary to Government.

To

The Revenue Department Secretariat.
The Financial Department, Secretariat.
The Commissioner N. D.
The Commissioner C. D.
The Commissioner S. D.
The Survey Commissioner and Director of Land Records
and Agriculture.
The Superintending Engineer C. D.
The Superintending Engineer N. D.
The Superintending Engineer S. D.
The Superintending Engineer, Indus Right Bank Division.
The Superintending Engineer, Indus Left Bank Division.
The Examiner of Public Works Accounts.
The Government of India.
The Secretary of State for India. } By letter.
The Editors' Table.

With copies of
report.

Exd, R. B. F.

BOMBAY PRESIDENCY

Part I.

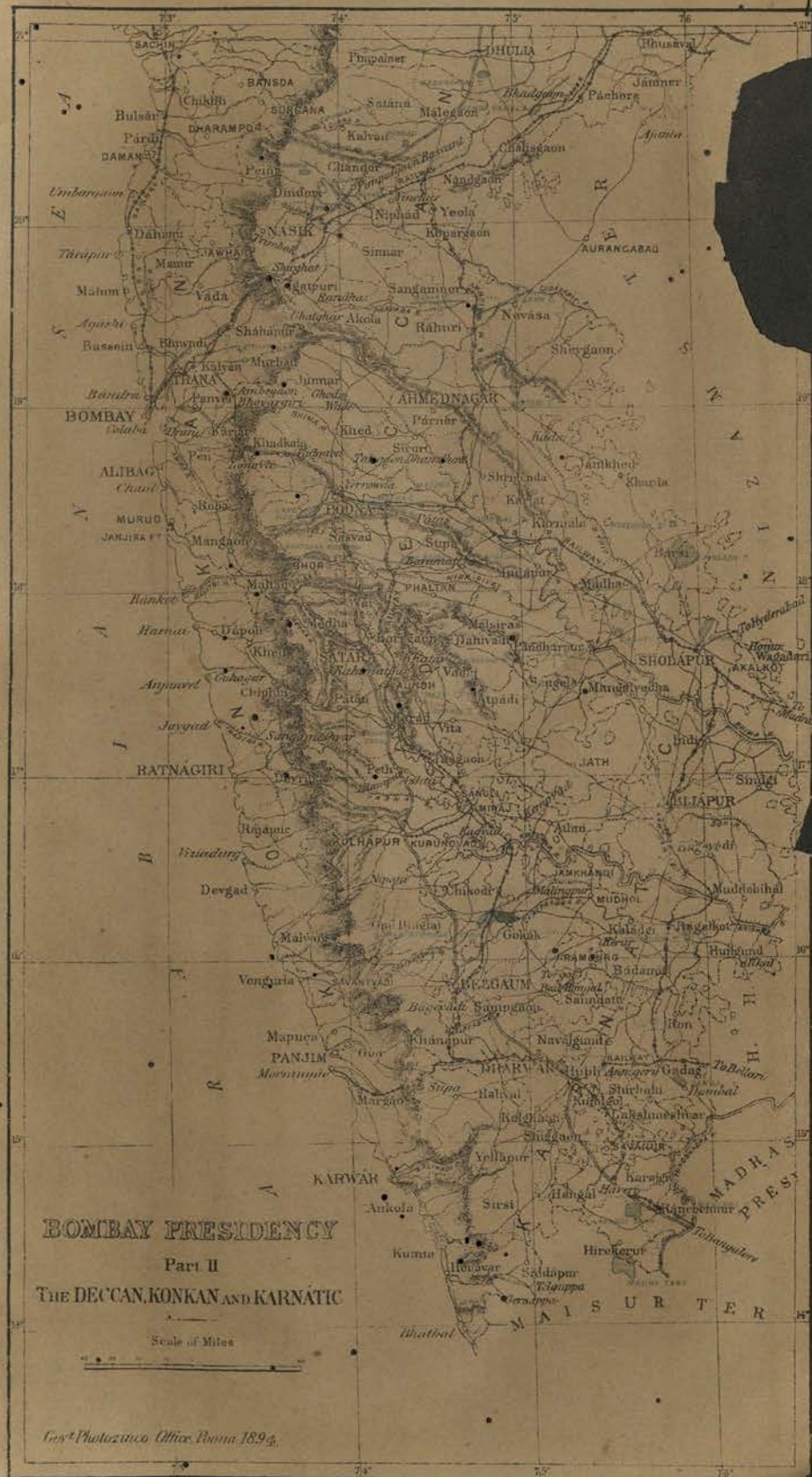
GUJARAT AND THE TAPTI VALLEY

Scale of Miles

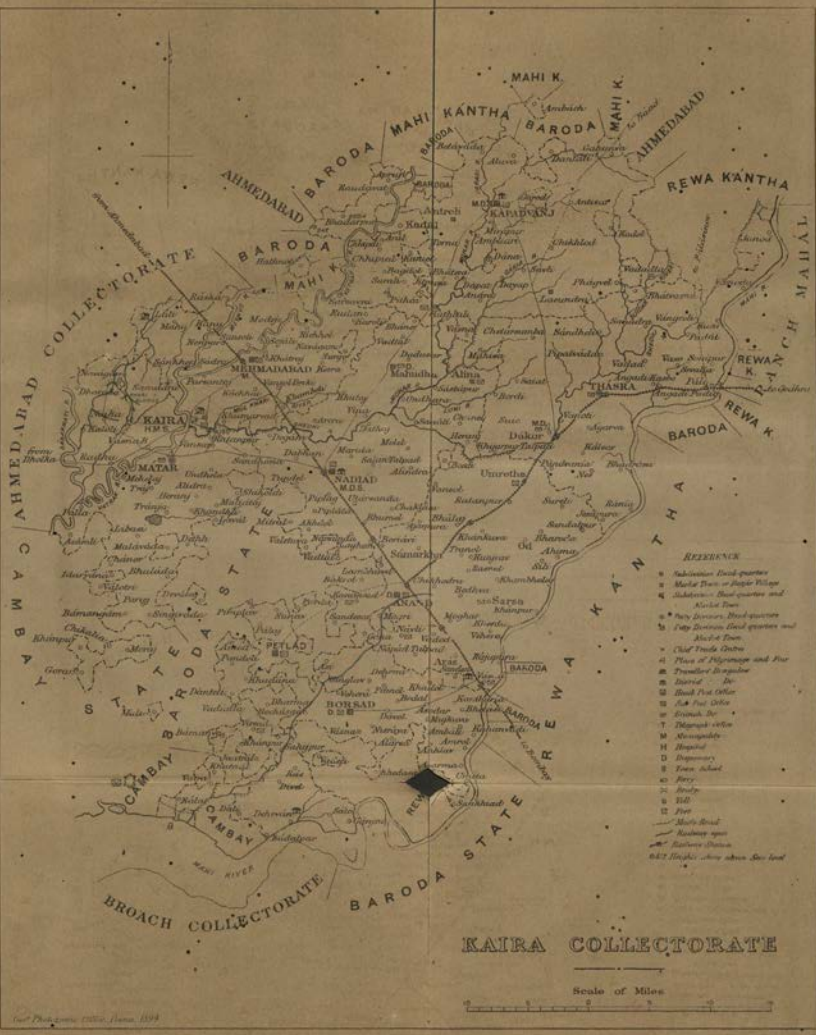


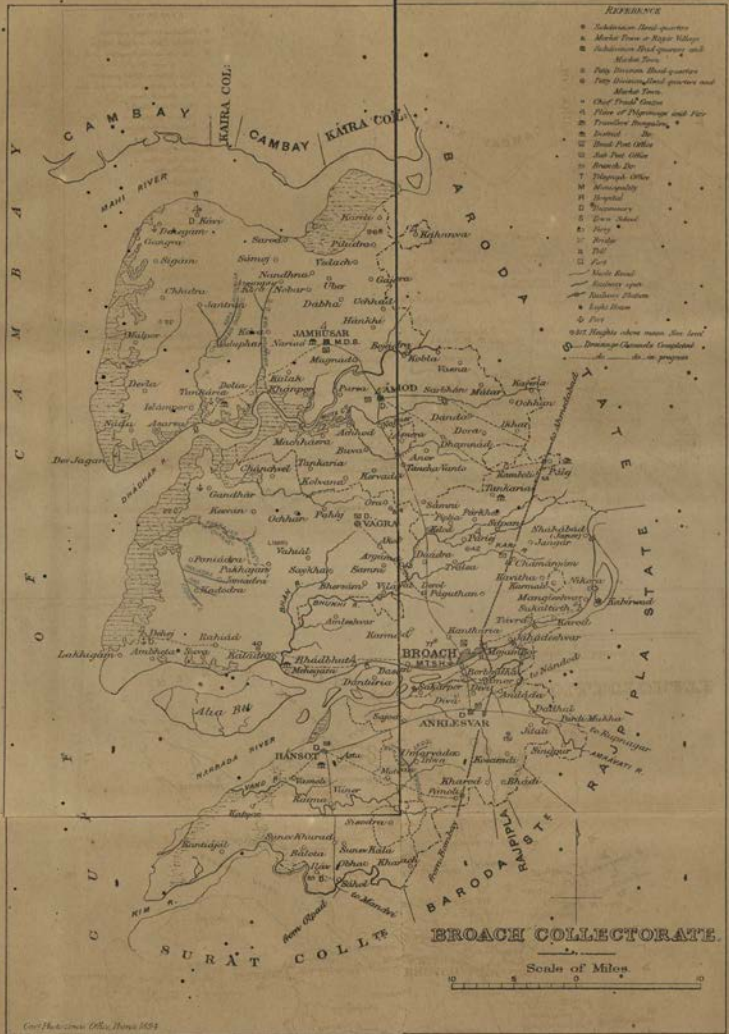
Geog. Photocopy Office, Poona 1894

For further information, see the following works:
 1. Gazetteer of the Bombay Presidency, Vol. I, Part I.
 2. Gazetteer of the Bombay Presidency, Vol. I, Part II.
 3. Gazetteer of the Bombay Presidency, Vol. I, Part III.
 4. Gazetteer of the Bombay Presidency, Vol. I, Part IV.
 5. Gazetteer of the Bombay Presidency, Vol. I, Part V.
 6. Gazetteer of the Bombay Presidency, Vol. I, Part VI.
 7. Gazetteer of the Bombay Presidency, Vol. I, Part VII.
 8. Gazetteer of the Bombay Presidency, Vol. I, Part VIII.
 9. Gazetteer of the Bombay Presidency, Vol. I, Part IX.
 10. Gazetteer of the Bombay Presidency, Vol. I, Part X.









KHANDESH COLLECTORATE EAST.

Scale of Miles



REFERENCE

- Subdivision Head quarters
- ▲ Market Town or Bazar Village
- Subdivision Head quarters and Market Town
- Petty Division Head quarters
- Petty Division Head quarters and Market Town
- Chief Trade Centre
- ▲ Place of Pilgrimage and Fair
- Traveller Bungalow
- Jail
- Head Post Office
- Sub Post Office
- Branch Dist.
- Pilgrimage Office
- Municipality
- Bazaar
- Dispensary
- Town School
- City
- Bridge
- Hill
- Fort
- Main Road
- Railway line
- Railway Station

6500 Heights above mean Sea level

KHANDWA DISTRICT
COLLECTORATE
WESTERN GHATS

Scale of Miles
10 5 0 5 10

[illegible]

- *Schizanthus* *Black quarters*
- *Mark Twain* *in Ragin' Billies*
- *Schizanthus* *Black quarters and*
Mark Twain
- *Petty Division* *Black quarters*
- *Petty Division* *Black quarters and*
Mark Twain
- *Chief Trade Captain*
- *Flow of Polygraph and Fair*
- *Translating Evangelist*
- *Detritus* *Box*
- *Head Post Office*
- *Sub Post Office*
- *Branches* *Box*
- *Telegraph Office*
- *Monopolists*
- *Regiment*
- *Regiment*
- *Army School*
- *Pony*
- *Armed*
- *Tell*
- *Past*
- *Noble Road*
- *Embassy open*
- *Embassy Station*

Govt Publications : Printed 1894

NASIK COLLECTORATE

Scale of Miles



REFERENCE

- Indian Head quarters
- Market Town or Repair Village
- Indian Head quarters and Market Town
- Pany Indian Head quarters
- Pany Indian Head quarters and Market Town
- Chief Quarters
- Place of Pilgrimage and Fair
- Traveller Bungalow
- District Office
- Head Post Office
- Sub Post Office
- Branch Office
- Telegraph Office
- Municipality
- Hospital
- Dispensary
- Town School
- Ferry
- Bridge
- Fair
- Post
- Made Road
- Railway line
- Railway Station
- 652 Height above mean sea level

T E C T O R A T E .

AHMEDNAGAR COLLECTORATE

Scale of Miles
0 1 2 3 4 5 6 7 8 9 10

REFERENCE

- 1 Subdivision Head quarter
- 2 Market Town or Bazar Village
- 3 Subdivision Head quarter and Market Town
- 4 Paly Division Head quarter
- 5 Paly Division Head quarter and Market Town
- 6 Chief Police Centre
- 7 Place of Police Station and Fair
- 8 Travelling Bungalow
- 9 District Office
- 10 District Post Office
- 11 Sub Post Office
- 12 District Jail
- 13 District Office
- 14 Municipality
- 15 Hospital
- 16 Dispensary
- 17 Town School
- 18 Girls
- 19 Bridge
- 20 Well
- 21 Fort
- 22 Main Road
- 23 Railway line
- 24 Railway Station

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Revised Edition, 1904.

POONA COLLECTORATE

Scale of Miles

REFERENCE

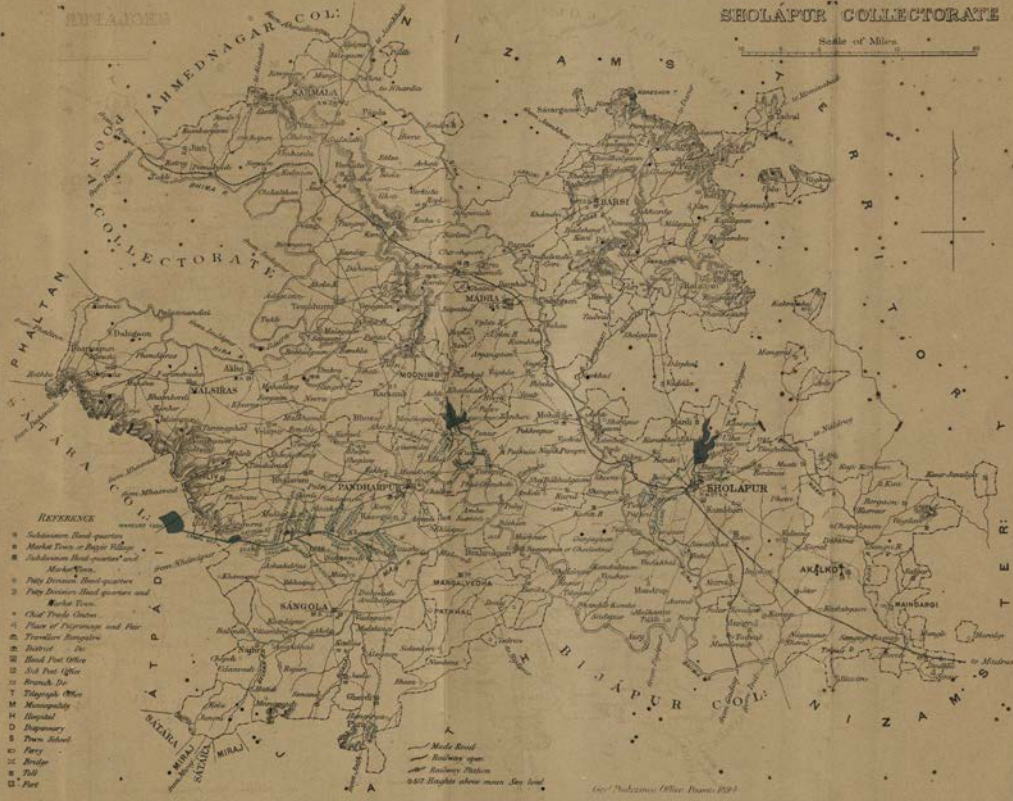
- 9 Subdivision Road quarters
- 10 Market Town or Paper Village
- 11 Subdivision Road-quarters and
- 12 Market Town
- 13 Army Division Road-quarters
- 14 Subdivision Road-quarters and
- 15 Market Town
- 16 Chief Trade Centre
- 17 Place of Pilgrimage and Fair
- 18 Travellers' Bungalows
- 19 District Office
- 20 Head Post Office
- 21 Sub Post Office
- 22 Branch Office
- 23 Telegraph Office
- 24 Municipality
- 25 Hospital
- 26 Dispensary
- 27 Town School
- 28 J.C.V.
- 29 Jail
- 30 Post
- 31 Motor Road
- 32 Railway span
- 33 Railway Station

SHOLAPUR

AHMEDNAGAR COL.

SHOLAPUR COLLECTORATE

Scale of Miles



REFERENCE

- 1 Subdivision Head quarters
- 2 Market Town or Bazaar Village
- 3 Subdivision Head quarters and Market Town
- 4 Petty District Head quarters
- 5 Petty District Head quarters and Market Town
- 6 Chief Trade Centres
- 7 Place of Importance and Fair
- 8 Travellers Bungalow
- 9 District Office
- 10 Head Post Office
- 11 Sub Post Office
- 12 Branch Post Office
- 13 Telegraph Office
- 14 Municipality
- 15 Hospital
- 16 Dispensary
- 17 Town School
- 18 Fair
- 19 Bridge
- 20 Toll
- 21 Fort

— Made Road
 — Railway open
 — Railway Station
 500' Heights above mean Sea level

SATARA COLLECTORATE

Scale of Miles

REFERENCE

- Subdivision Head-quarters
- Market Town or Bazar Village
- Subdivision Head-quarters Road
- Market Town
- Petty Division Head-quarters
- Petty Division Head-quarters and Market Town
- Chief's Residence
- Place of Pilgrimage and Fair
- Passenger Steamship
- Government Post Office
- Head Post Office
- Sub Post Office
- British Residency
- Municipal Office
- Municipality
- Hospital
- Dispensary
- Town Hall
- Party
- Bridge
- Fort
- Fort
- Made Road
- Railway open
- Railway Station

6000 Feet above mean Sea level





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on 01 February, 2020

